





Miss Mildred Costa

GUTENBERG AND THE MASTER OF THE PLAYING CARDS

nem perducebant iuta eorum operibus duris.
 luti et lateris. omniq; famulati quo in terreo-
 peribus premebantur. ¶ Dixit autē rex ob-
 stetricibus hebreorū. quarū una vocabatur Ses-
 fora. altera Phua. precipiens eis. Quando ob-
 stetricibus hebreas. et partus tempus adue-
 nerit. si masculus fuerit interficite illum. si fe-
 mina reseruate. ¶ Timuerunt autē obstetri-
 ces deum. et non fecerunt iuxta preceptū regis.
 Egypti. sed conseruabant maies. Quibus ad-
 se accessit rex ait. Quid nam est hoc qđ face-
 re uoluistis. ut pueros reseruaretis. Que respo-
 derunt. Non sunt hebreæ sicut Egyptie mulie-
 res. ipse enim obstetricandi habent sciētiā. et
 priusquam ueniamus ad eas parunt. ¶ Bene-
 ergo fecit deus obstetricibus. Et creuit populus.
 confortatusq; est nimis. Et quia timuerant
 obstetrices deum. edificauit illis domos. ¶ Pre-
 cepit autē Pharaō omni populo suo dicens.
 Quicquid masculini sexus natum fuerit in
 flumen proiate. quicquid feminei reseruate.

Capitulum Secundum.

Aggressus est post hec iur de domo Le-
 ui. accepta uxore stirpis sue. Que
 concepit et peperit filiū. Et uidens
 eum elegantem. abscondit tribus mensibus.
 Cumq; iam celare non posset. suplit fascellam
 strepam. et linit eam byrrumne ac pice. po-
 suitq; intus infantulū. et exposuit eum iā



Figure 1. The Giant Bible of Mainz, Washington, D.C. Portion of f.18r (original size).

Gutenberg and the Master of the Playing Cards

BY HELLMUT LEHMANN-HAUPT

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To H. P. K.

Preface

A SHORT preliminary report of the discovery that Gutenberg may have been associated with the development of copper engraving was published in the *Gutenberg-Jahrbuch* 1962: "Gutenberg und der Meister der Spielkarten." In this article I not only submitted factual evidence previously unknown but also took the calculated risk of proposing a rather startling interpretation. Somewhat to my surprise the reception of the article turned out to be decidedly favorable, both in printed reviews and in letters from authorities in the field, who urged me to publish an English-language monograph on the subject.

The present publication, then, is the answer to this request. It is a considerably expanded version of the German article, containing a great amount of new material and much fuller documentation in text, footnotes, and illustrations. As far as possible, I have tried to separate the presentation of factual evidence in Part One from the interpretation of this material in Part Two. This does not mean, however, that Part One is entirely free of hypothetical elements; certain questions need recognition as they present themselves. Nor is Part Two completely devoid of facts. Some well-established and recognized artistic and technical products and procedures are cited in support of my theory.

In spite of their favorable earlier reception I do not expect the new ideas about the nature of Gutenberg's invention contained in this book to be accepted fully and universally. That would not even be desirable. I shall be the first to welcome other, better answers to the many intriguing questions raised here.

In the course of this study I have enjoyed a good deal of assistance and support of one kind or another. The proposed interpretation of the new evidence is my own responsibility, however, not that of the many kind colleagues and friends who helped. Whenever possible I have acknowledged specific assistance, suggestions, and answers to questions in the footnotes. There still remains the pleasant obligation of expressing my profound gratitude to the American Council of Learned Societies, and especially its president, Dr. Frederick Burkhardt, for a grant-in-aid for the completion of this study, and to Mr. William H. Scheide, Jr., for a generous subsidy toward the publication of the book. I am also deeply grateful to Miss Dorothy Miner of the Walters Art Gallery in Baltimore, Professor Harry Bober of the Institute of Fine Arts, New York University, Miss Sheila Edmunds of Wells College, Aurora, New York, and Dr. James Wells of the Newberry Library in Chicago, for much invaluable counselling; to Mr. Lessing Rosenwald of Jenkintown, Pa., Mrs. Mina Bryan, and Mr. Gillet G. Griffin, of Princeton, N.J., and to my colleague Dr. Lotte Labus, for their help and support; and to more librarians, printroom curators, and museum officials than I

can mention individually, for information and for providing and giving permission for photographs used. Last, but not least, I must thank Walter Langsam, my editor at the Yale University Press, and John McCrillis, the designer, for their help in turning the manuscript into a book.

The dedication of this book to Hans Peter Kraus, with whom I have been associated as bibliographical consultant since 1952, is in acknowledgment of the vital impetus which he gave to this study and the permission to use his excellent reference library.

H. L.-H.

New York City

July 4, 1966

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Part One: The Evidence

I

A SERIES of fortunate circumstances has produced a body of evidence pointing strongly to the possibility that Gutenberg, the inventor of printing with movable type on a press, had a major share in the early development—if not the actual invention—of copper engraving. Relief printing from type and intaglio printing from engraved plates have hitherto been considered separate, independent graphic processes. Now it appears that the earliest known copper engraver, the so-called Master of the Playing Cards, was associated with Gutenberg. It is possible to prove that the iconography of the Master was not, as hitherto believed, his own invention, but developed from sources used simultaneously and in the same locality by illuminators active in Mainz in the 1450s, among them artists connected in some way with Gutenberg's workshop.

A new concept of Gutenberg's creative dream is emerging. There remains little doubt that he envisaged the typographic reproduction in color of the medieval liturgical manuscripts current in his time. He was developing mechanical means for the multiplication of manuscripts, including not only the writing, the initials, and the calligraphic ornamentation but apparently also illuminated miniatures and borders. The engravings of the Master of the Playing Cards, it seems, were not created *a priori* for a card game, but as technical stepping-stones toward the multiple reproduction of miniatures. Only when Gutenberg's financial disaster closed the Mainz workshop to him were these engravings utilized commercially for the production of playing cards.

Our first piece of evidence, the so-called Giant Bible of Mainz, formerly in the possession of the Grand Duke of Gotha, is one of the most magnificent monuments of Middle-Rhenish book art of the fifteenth century. The two volumes, each measuring about 22½ x 15¾ inches (570 x 400 mm.), are inscribed on the choicest parchment in noble, large, Gothic liturgical letters and are decorated with scrolls and miniatures of the first quality.¹

The scribe of the manuscript did us the favor of recording the beginning, the progress, and the end of his activity in a series of dates which he entered from time to time on the pages of the Bible. He began his work in Mainz on

1. The Giant Bible of Mainz was given to the Library of Congress by Mr. Lessing Rosenwald, the distinguished American bibliophile. He purchased it in 1952 from the New York rare book dealer Hans P. Kraus. As a new member of the latter's staff it was one of my first tasks to assist my late colleague, Dr. Hans Nachod, in scholarly research to provide a detailed description of the Mainz Bible. The results of our investigation were consulted by Miss Dorothy Miner, keeper of manuscripts of the Walters Art Gallery in Baltimore, in the preparation of the first brief monographic treatment of the Bible, entitled *The Giant Bible of Mainz, 500th Anniversary* (Washington, D.C., 1952).

Introduction

The Giant Bible
of Mainz

April 4, 1452 and finished it on July 9, 1453. In other words, he was working in the place, at exactly the time, that the famous Gutenberg Bible, also known as the 42-line Bible, was being produced by the European inventor of printing with movable type.²

Of special interest in the Mainz Bible are the many fine miniatures skilfully arranged in the richly illuminated borders: deer, bears, monkeys, lions, nude human figures, cyclamens, little roses, and columbines (frontispiece). The unknown artist who painted these with an exceptionally sure hand was a master of the first rank. With great precision he outlined each subject and filled in his diminutive figures with a highly sophisticated sense of color and a keen understanding of realistic representation. He used brush strokes bordering on drawing, but he always modeled fluently. His work remained incomplete.

The master worked only to the end of folio 31 of the first volume. That he stopped suddenly is evident from the fact that he did not complete some details on this page. Here and there on the following pages another hand started illuminations which likewise were not completed. Only in the last signature of the second volume do we again find completed illuminations as well as calligraphic decoration.

In the search for iconographic parallels to these miniatures, they were compared not only with panel and miniature paintings but also with fifteenth-century copper engravings. This led to the surprising discovery that the work of the earliest known copper engraver, the Master of the Playing Cards, included many of the subjects of the Giant Bible of Mainz in his work (figures 2, 3b, and 17b).³ The miniaturist of the Mainz Bible is thus connected with a man who occupies a unique position in the history of the graphic arts. We do not know his name, and no trace of him has survived to the present day except slightly more than a hundred exceedingly rare copper engravings. He is called the *Meister der Spielkarten* (Master of the Playing Cards) because some sixty of his engravings are playing cards, the first ever to have been printed from intaglio plates. This man, an artist of the highest caliber and a brilliant technician, is universally considered the earliest master of the art of copper engraving. Known at one time to only a handful of experts, his pre-eminence is now recognized in all histories, handbooks, and dictionaries of art.

Although he was the first to practice a new graphic arts technique, it is an amazing fact that there is nothing crude or experimental about the Master's

2. Aloys Ruppel in *Johannes Gutenberg, sein Leben und sein Werk* (Berlin, 1947), p. 145 (trans.), states: "We [may] conclude, with a measure of probability, that Gutenberg produced his printing apparatus between 1450 and 1452, and that composition and presswork of the 42-line Bible was begun in 1452." He also wrote: "the printing of the 42-line Bible was completed by the middle of 1455 at the latest." The *Gesamtkatalog der Wiegendrucke* (GW 4201) places the completion of the printing "c. 1454-55."

3. Credit for this discovery is due to Mr. H. P. Kraus who, after the manuscript arrived in New York, was the first to make a study of early German copper engravings.

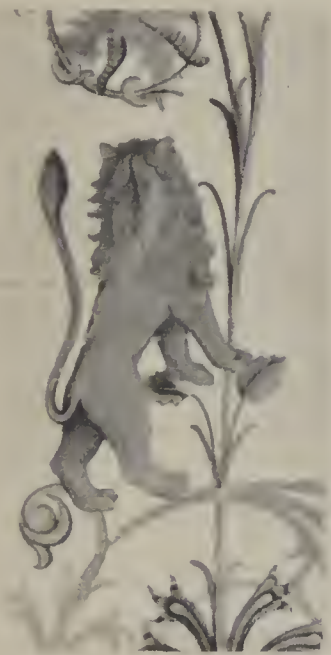
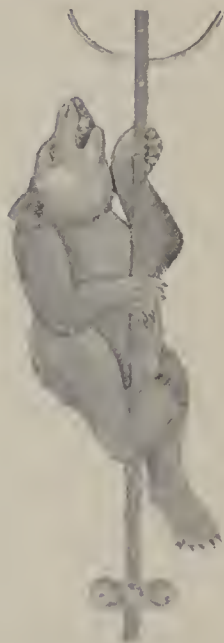


Figure 2. The Nine of the Wild Animal Suit in the first engraved playing cards, surrounded by related miniatures from the Giant Bible of Mainz, Washington, D.C. (original size).

delicately executed engravings. This is a characteristic quality which his work shares with that of Gutenberg, whose typecutting, composition, and presswork, as demonstrated in the 42-line Bible, have never been surpassed by a later printer.

The results of the comparisons between the playing cards and the miniatures in the Giant Bible are recorded in column VIII of the comparative table at the end of this book. It is evident that many of the wild men, bears, lions, deer, and some of the small roses, which one finds in the illuminated borders of the Bible, are very similar to figures in the engraved playing cards.⁴ In certain instances the relationship is so strikingly close that both miniatures and copper engravings seem to have been done by the same hand. For instance, three little figures from the Deer Suit (all on f.18r of the Bible) are not only exactly the same size as the engravings but are as closely related in their execution as is possible in view of the different techniques employed. Moreover, the other miniatures—usually slightly smaller than the copper engravings and in some cases showing other slight variations—are exceedingly close to the engravings in artistic conception and in stylistic execution.⁵

In one very important aspect, however, the miniatures are superior to the copper engravings. In the Bible, the positions of the animals and humans are always motivated, the figures being carefully integrated into the scrollwork. The miniaturist took great care to show the wild men and hunters standing with both feet planted on the curves of the spiraling tendrils. Likewise, he always connected the lions, deer, and bears with the plant ornamentation in such a way that their posture appeared the logical result of this integration. In many cases he incorporated two figures into an action group, such as a hunter aiming his bow and arrow at a doe above him or pointing a two-pronged spear at a deer. In the copper engravings we see the figures isolated and for the most part in unmotivated positions. A classical comparison is seen in figures 3a and 3b of the climbing bear.

In the light of these observations it is inconceivable that the Bible miniatures were copied from the copper engravings. There is further evidence against this assumption. The illuminator of the Giant Bible, in every way an artist of the highest caliber, created with rich imagination; he commanded a very extensive repertory. In his borders we find many animals, human figures, and flowers that do not occur in the playing cards. Even if we assume that some of

4. To facilitate the comparison of the miniatures with the engraved playing cards, the latter are referred to in the text and in the table by plate numbers in Max Geissberg's *Das älteste gestochene deutsche Kartenspiel* (Strassburg, 1905), preceded by the symbol G. (e.g. G.24).

5. It is interesting to find that one figure, the wild man playing his horn, occurs in two versions. On f.2v we find him very much as he appears in the playing cards (G.42), but on f.18r we see him not only reversed but actually much more like his counterpart in the engraved cards in the Vienna Library. See Geissberg, *Das Kupferstich-Kartenspiel der K. u. K. Hofbibliothek zu Wien . . .* (Strassburg, 1918), Seven of the Wild Man Suit, center, plate 7. See also footnote 14 of this chapter.



a



b



c



d



e



f

Figure 3. The climbing bear in (a) the engraved playing cards, (b) the Giant Bible of Mainz, Washington, D.C., (c) the Scheide Bible, (d) the Giant Bible of Mainz, Würzburg, (e) Hs.II, 141, Municipal Library, Mainz, (f) prayer book of Margarethe von Simmern, Berlin Print Room.

these miniatures corresponded to playing cards that have not survived, there still remains a rich repertory derived from other sources.⁶

The definitive history of the beginnings and early phases of copper engraving north of the Alps is the work of Max Lehrs, curator of the print rooms in Dresden and Berlin early in this century.⁷ Begun in 1882, this—his main work—is the result of twenty-five years of intensive study of the material. The Master of the Playing Cards is the first copper engraver Lehrs dealt with. In the attempt to arrive at an accurate date for the Master's work, Lehrs listed all the miniatures in fifteenth-century illuminated European manuscripts in which he found parallels to figures in the engravings (he did not know the Giant Bible of Mainz or many other miniatures in manuscripts and early Mainz imprints, discussed here for the first time). In each case he declared that the miniatures were copied from the copper engravings.⁸ He reached this conclusion because he believed that the entire set of playing cards was completed by the year 1446. He had found this date entered in the first of a three-volume manuscript of the *Chronique de Hainault* in the Bibliothèque Royale in Brussels (manuscript 9243). The second volume was completed in 1449, the third apparently not before about 1455. In the first volume of this chronicle Lehrs found a cyclamen that also occurs in the engraved cards, and he concluded from this slender evidence that the entire set of playing cards must have been completed by 1446.

He did not realize two points: first, that the date in volume I of the chronicle indicated merely the conclusion of the writing of the text; second, that the illustrator of the second volume of the chronicle, Guillaume Vreland, was not paid for his work until 1467–68.⁹ No work of Vreland is known before 1454. From 1454 on the artist can be traced in the town of Bruges. He was a skilful professional painter of miniatures, noted especially for his fine landscapes, and he was a neighbor and friend of the great Flemish painter Hans Memling.¹⁰

Let me repeat that Vreland was paid in 1467–68 for the illuminations in the second volume of the *Chronique de Hainault*, which was probably not completed before about 1455. It is unlikely that he had to wait many years for payment, so that one may assume that he did not paint his illuminations until after 1460. We have no record of when the illuminations for volume I of the *Chronicle* were made (the text was completed by 1446), but it is highly probable that they, too, were made several years later.

6. This suggests the rather tempting possibility of reconstructing some of the missing cards from the miniatures not only in the Giant Bible of Mainz but also in some other fifteenth-century manuscripts and printed books discussed below.

7. Max Lehrs, *Geschichte und kritischer Katalog des deutschen, niederländischen und französischen Kupferstichs im XV. Jahrhundert* (Vienna, 1908).

8. *Ibid.*, I, 142 ff.

9. P. Durrier, *La Miniature flamande* (Brussels, 1921), pp. 45, 52.

10. Thieme-Becker, *Künstler-Lexikon*, XXXIV, pp. 57–71.

dñō deo meo olocauitā gēntia. Euit
ergo dauid arēā et boues argēti sidis
quīnquagēta: et edificauit ibi dauid
altare dñm: et obtulit olocauitā et
pacificā. Et repropiciatus est dñm
terre: et cohibita est plaga ab israhel.

quosq; et salomonē fratrē suū nō vo-
cauit. Dixit itaq; nathan ad bethsabee
matrem salomonis. Num audisti qd
regnauerit adonias fili⁹ agith et dñs
noster dauid hoc ignorat? Nūc ergo
ueni accipe consiliū a me: et salua



Figure 4. The climbing bear in the Scheide Bible, f.160v (reduced).

Quia hoc magis placuit cordi tuo.
et nō postulasti diuitias ⁊ substantiā
et gloriā. neq; animas eorū q̄ te oderāt.
sed nec dies uite plurimos: petisti au-
tem sapientiam ⁊ scientiā. ut iudicare
possis pplū meum. super quē constitui

onem panum sempiternam. ⁊ ad olo-
caustomata mane ⁊ vespere. sabbatis
quoq; et neomenijs. ⁊ solemnitatibz
domini dei nostri in sempiternum que
mādata sunt israeli. Domine enī quā
edificare cupio magna ē. Magnis



Figure 5. Hunter and lion in the Scheide Bible, f.208r (reduced).

In view of this evidence, the year 1446 loses its universally accepted significance for the dating of the playing cards.¹¹ By the same reasoning, the close connection between the miniatures in the Giant Bible of Mainz (written in 1452–53) and the first engraved playing cards (no longer to be dated 1446) assumes serious significance for the dating as well as the localization of the Master of the Playing Cards.

The observation that the miniatures in the Giant Bible cannot have been copied from the playing cards does not necessarily imply that the playing cards were copied from the Bible. It seems much more probable that a common source—a model book or, possibly, loose pages containing model drawings—was used both by the illuminator of the Giant Bible and the first copper engraver. That model books were commonly used in the fifteenth century can readily be seen from the fact that Scheller's recent survey¹² lists no less than fourteen such model books surviving from the years between about 1400 and 1460. He lists a total of only thirty-one still extant model books, going back as far as the first century B.C. In other words, nearly half his examples are from the fifteenth century, the period with which we are concerned here.

On the basis of these new observations it becomes highly probable that both the Master of the Playing Cards and Johannes Gutenberg were actively working in related fields in Mainz in the early 1450s. Under these circumstances, it is inconceivable that they should not have known of each other.

The possible connection between these two pioneers in the graphic arts is strikingly underlined by the Gutenberg Bible in the collection of Mr. William H. Scheide.¹³ Exactly like the Giant Bible of Mainz, it has in its marginal scrolls numerous little painted figures and flowers which correspond to many of the engraved playing cards (see column IX of the table, and figures 4, 5, 6a and b). Here too, in the Scheide Bible, we find that the animals are usually much better motivated than in the playing cards, with the exception of the so-called "bear sucking its paw" (figure 2, top center of the playing card).

One figure in this Bible, the wild man swinging his club at a lion on f.208r (figure 5), does not occur in the known works of the Master of the Playing

The Scheide Bible

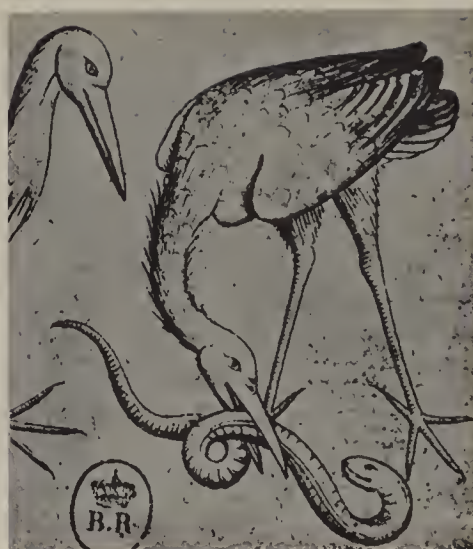
11. For instance, A. M. Hind, late of the British Museum, followed closely and unquestioningly in Lehrs' footsteps. In his *A History of Etching and Engraving* (London, 1923), p. 20, he mentions first the *Flagellation* of a Passion series in the Berlin Print Room, which indeed bears the date 1446. "There is direct evidence," he goes on, "that others preceded this at least by a few years, and the priority of one may reasonably be extended to a decade or even more. Copies in illuminated manuscripts point to the existence of prints by the engraver, called from his most extensive work the MASTER OF THE PLAYING CARDS, as early as 1446." Hind repeats this argument in his *Early Italian Engravings* (London, 1938). See Introduction, footnote 1. For a discussion of the 1446 *Flagellation*, see p. 61 below.

12. R. W. Scheller, *A Survey of Medieval Model Books* (Harlem, 1963).

13. The Scheide collection is on deposit at the Princeton University Library. There is a brief description of the Bible in Wieland Schmidt, "Das Berliner Exemplar der Gutenberg-Bibel," in *Edwin Redslob zum 70. Geburtstag*, p. 107, no. 11.



a



b



c



d

Figure 6. Stork and snake in (a) the Scheide Bible, f.117r, (b) the engraved playing cards (G.23, bottom right), (c) the Giant Bible of Mainz, Würzburg, f.222r, (d) portion of a woodcut in the *Hortus sanitatis*.

Cards; but he does have his counterpart, in slightly more elaborate dress, on the eight of the Wild Man Suit of the Vienna playing cards. It is more than probable that he appeared on one of the Master's lost cards.¹⁴

A detailed comparison of the miniatures in the Giant Bible of Mainz with those in Mr. Scheide's Gutenberg Bible clearly shows that they were painted by two different artists. In the Scheide Bible, too, a highly gifted master was at work, but he used a somewhat different range of colors and his style is slightly more graphic, with a more decided emphasis on the line. It is also important to note that the manuscript and the printed book differ strongly from each other in the occurrence of miniatures corresponding to the playing cards. Eight little flowers are found in both. But the Giant Bible of Mainz has at least twelve figures that do not occur in the Scheide Bible. On the other hand, the Scheide Bible has at least five miniatures that do not occur in the Giant Bible: a beautiful cyclamen (f.226v) and four fine bird portraits (f.160v, 117r, 193v, 231v; also a rather similar bird which occurs twice, on f.266r and on f.280r). No bird portraits corresponding to the playing cards occur in the Giant Bible. It is also an interesting fact, as we will discuss later, that the illuminator of the Scheide Bible—exactly like the illuminator of the Giant Bible—interrupted his work suddenly, after completing the first half of the first volume (f.231v).

The occurrence in the Scheide Bible of a large number of miniatures corresponding with the playing cards naturally raises the question of how many other such examples can be found on the pages of the imprints of the first printing press in Mainz. No systematic attempt has yet been made to examine all the surviving copies of the Gutenberg Bible and other early Mainz imprints, especially those printed by Fust and Schöffer. So far, a few examples have come to light, though none of them nearly so rich as the Scheide Bible.

Lehrs cites only a single, isolated instance of a playing card picture in a copy of the 42-line Bible. He found the first bird of the Eight of Birds (G.27) in the Gutenberg Bible in the Library of the Austrian State in Vienna.¹⁵ There are, however, other examples.

The Gutenberg Bible in the General Theological Seminary in New York City¹⁶ has on f.5r, in the middle of the lower margin, the lying doe from the Seven of Deer (G.18), somewhat larger than in the engraving. Both the borders

Other Illuminated
Early Mainz
Imprints

14. The Vienna playing cards form a group of six cards and six fragments preserved in the Library of the Austrian State in Vienna, which are ascribed to an unknown copyist after the Master of the Playing Cards (Lehrs, I, 149–207, nos. 20–85). Lehrs explains that the "Vienna Copyist" used not only the playing card master as his model but also another early engraver, the Master E. S. He also points out that certain of the cards were made after lost originals.

15. Lehrs, op. cit., p. 146; illustrated in Faulhaber, *Illustr. Geschichte der Buchdrucker-kunst* (Vienna, 1882), after p. 140.

16. See *The Gutenberg Bible of the General Theological Seminary*, St. Mark's Library, New York City, n.d. [Spring 1965], illus. p. 9.

and the doe seem to be closely related to a manuscript of Mainz origin in the Municipal Library of that city (Stadtbibliothek, Hs.II, 61; see p. 18 below and figures 11 and 12).

The Pierpont Morgan Library in New York owns a vellum copy of the beautiful 48-line Bible printed in 1462 by Fust and Schöffer, after Gutenberg's separation from his printing establishment. This Bible is notable as the first designed for more comfortable reading and set, therefore, in a fine regular book font rather than in the liturgical type of the 42-line Bible. The copy in New York has on f.1 of volume II (bottom of the right border) the lying deer from the Four of Deer (G.16) and (upper border, left) the walking doe from the Six of Deer (G.17). Both these animals are drawn in a rather coarse linear style, in the same size as the engravings.¹⁷ A thorough examination of all surviving early Mainz imprints might well yield additional examples of miniatures which correspond to the engraved playing cards.

Returning to our examination of manuscripts closely linked with the first engraved playing cards, we discover that the Giant Bible in the Library of Congress is not the only manuscript produced in Mainz after the year 1450 to show such connections. It is surely significant that an entire group of manuscripts, all of them produced almost certainly in Mainz at various times in the second half of the century, show connections with the Master of the Playing Cards.

Another Giant Bible of Mainz origin is one of the treasures of the Würzburg University Library. Only the second volume, measuring about 15½ x 21 inches (395 x 535 mm.), is preserved.¹⁸ We find here once again the climbing bear, as well as a magnificent unicorn, two birds (one very similar in the playing cards,

17. Adolf Goldschmidt in his article "The Decoration of Early Mainz Books" in *Magazine of Art* (New York, October 1938), pp. 579-81, assigns the illumination of this Bible to a Mainz workshop but does not notice the connection with the Master of the Playing Cards. W. Schmidt, op. cit., mentions not only the 42-line Bible in the Scheide collection but also those in Berlin and in the Huntington Library. The illuminations of the latter two, which he assigns to a workshop in Saxony or Thuringia, possibly in Leipzig, show no direct relationship with the engraved playing cards. This is at least negative evidence for placing the Master of the Playing Cards in Mainz.

18. I am greatly indebted to Professor Fritz Arens of the Johannes Gutenberg University in Mainz, who pointed out to me the Würzburg Bible. It is listed in the Würzburg University Library as Mp.th.f.m. 11, *Biblia sacra latina a proverbis Salomonis usque ad apocalypsos Finem, c. prologis S. Hieronymi*. It was written in two columns, usually of 36 lines each, in magnificent large formal Gothic letters, on parchment. The MS is described in "Die Pergamenthandschriften der Würzburger Universitäts-Bibliothek," typewritten copy of the so-called Ruland-Stamminger handwritten card catalog; it is mentioned by F. Falk, *Die ehemalige Dombibliothek zu Mainz* (Leipzig, 1897), pp. 20, 137, 144; in the same author's *Bibelstudien, Bibelhandschriften und Bibeldrucke in Mainz* (Mainz, 1901), p. 41; in *Franconia Sacra, Jubiläums-Ausstellung 1952*, Mainfränkisches Museum Würzburg (Munich, 1952), p. 57.

Miss Elgin Vaassen, student of art history at Würzburg University, is writing her doctoral thesis on the Giant Bible in Würzburg. I am much obliged to her for additions and amendments as well as for photographs.

another somewhat related), and a flower which corresponds exactly and in all details to one in the engraved cards (see table, column X, and figures 3d, 6c, 7-10, 31). There are also some other similarities and connections to be found among the rich repertory of miniatures in the illuminated scrollwork that adorns the Würzburg Bible. Here, too, a decidedly gifted artist was at work. His style is again a little more graphic than that of the illuminator of the Scheide Bible. The unicorn in particular, which stands free and unconnected with any scrollwork (figure 7), is executed in careful penstrokes which are nevertheless quite distinct from the lines in the copper engraving. In spite of the close connection with the engraved unicorn in the Two of Deer (figure 8), there is no indication that one must have been copied from the other. In fact, it is quite obvious that the unicorn in the Würzburg Bible is closer to the source than the engraving.



Figure 7. The unicorn in the Giant Bible of Mainz, Würzburg, f.101v (approximately original size).

Figure 8. The engraved Two of Deer (G.14, original size).



The fact that the Würzburg Giant Bible is written usually in 36 lines offers tempting prospects for an investigation of its possible connections with the printed 36-line Bible (GW 4202, Mainz or Bamberg, c. 1458, not after 1461).



Figure 9. Bird from the engraved Nine of Birds (G.28, top right, original size).

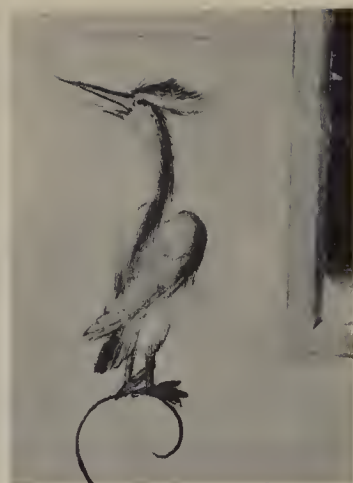


Figure 10. The same bird in the Giant Bible of Mainz, Würzburg.

Here, too, the conclusion is inevitable that a common model was used. In comparing the unicorn with the other miniatures in the manuscript, for instance with the climbing bear, one has the impression at first that more than one hand was at work. But careful examination does not seem to make it absolutely necessary to attribute to different artists the five miniatures that correspond to the playing cards.¹⁹

On f.222r we find a variation of the stork and the snake (figure 6c) which we encountered in the Scheide Bible (6a). A comparison of the illustrations shows clearly that, although the Scheide miniaturist and the copper engraver are very closely related, the Würzburg miniaturist took considerable liberties.

It is interesting to note that the Würzburg miniatures are connected not only with the Master of the Playing Cards (or the hypothetical model book) but also with the engravings of the Master E. S.²⁰

Generally speaking, the style of the illumination indicates a position somewhere between the Giant Bible in the Library of Congress and a manuscript still to be discussed, the *Breviarium Moguntinum* (see p. 28 below), that is to say, some time between 1455 and 1475. This accords well with the fact that the Giant Bible in Würzburg was "written for the Mainz Cathedral scholar Vulpert von Ders [d. 1478] and given by him to the Cathedral in Mainz" (trans.).²¹ His coat-of-arms occurs repeatedly in the manuscript.

19. Whether the entire illumination of this Bible is the work of only one artist I dare not say. Miss Vaassen has reached the conclusion that all in all two different artists are responsible.

20. Miss Vaassen, in a letter dated March 15, 1965, observes that, for instance, the Judgment of Solomon in Würzburg, f.2v, corresponds with Lehrs 7, and the John the Baptist, f.300v, resembles Lehrs 149, with evangelist symbols and church fathers. A more detailed study of the Bible, its artist or artists, and its date of production will be necessary before the significance of these relationships can be fully understood.

21. *Franconia Sacra*, p. 57.

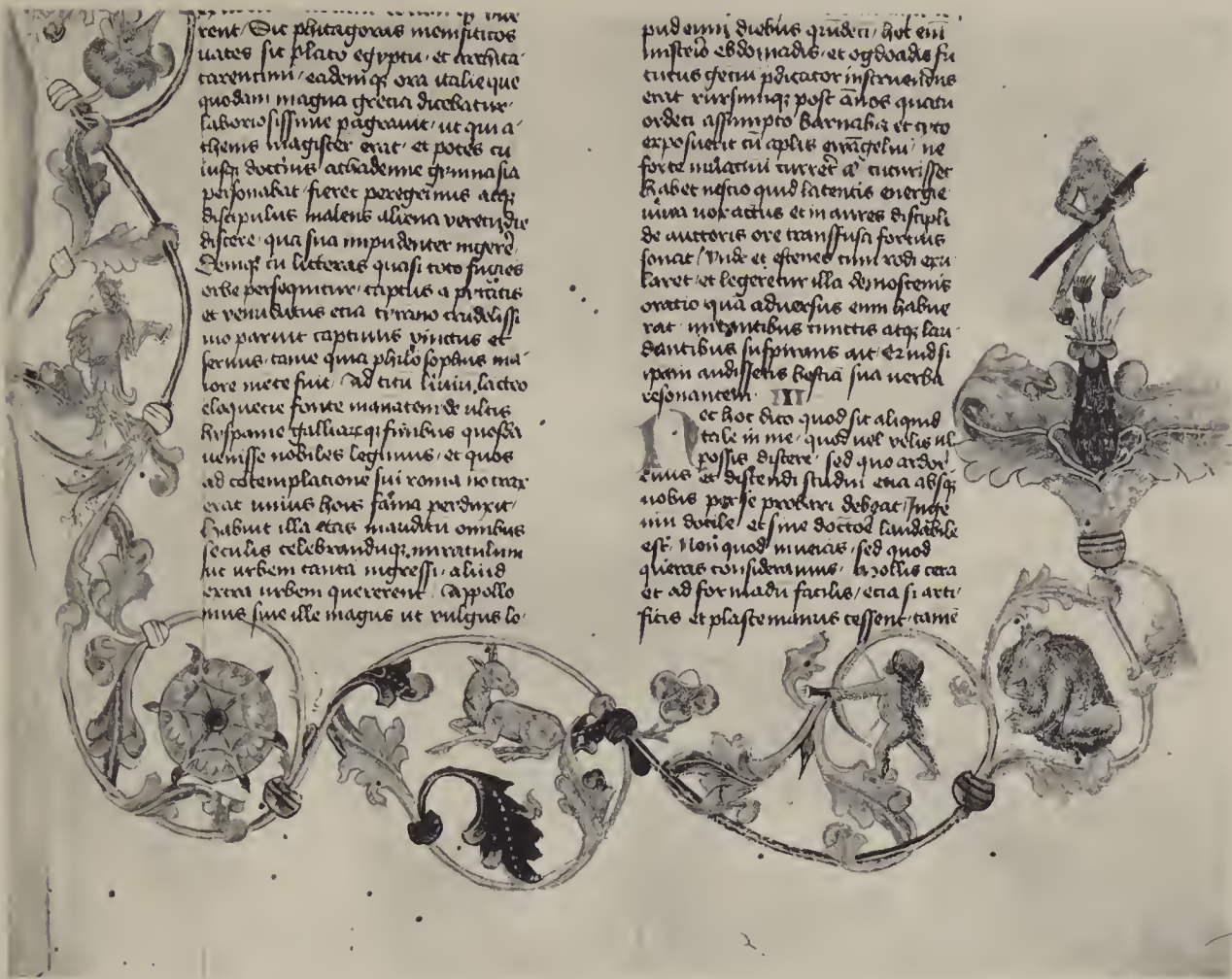


Figure 11. Portion of f.8r of an Old Testament manuscript, Municipal Library, Mainz (Hs.II, 61).

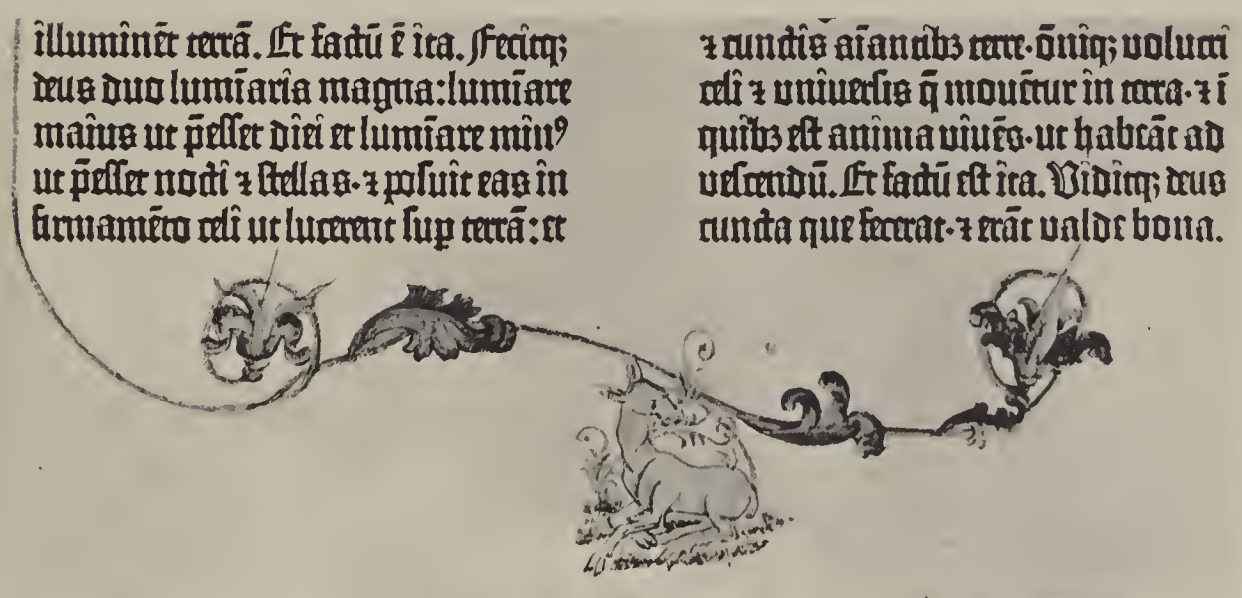


Figure 12. Portion of the opening page of Genesis in the Gutenberg Bible in the General Theological Seminary, New York.

Three manuscripts in the Stadtbibliothek in Mainz also contain miniatures corresponding to the engraved playing cards. Two of these will be discussed (pp. 25 f.). One of these, an Old Testament, is of special interest.²² In the scrollwork of f.8r (column XI of the comparative table; figure 11) are no fewer than five miniatures that correspond to the playing cards: three men from the Human Figure Suit, a lying deer, and the bear sucking its paw. All five are of the same size as in the playing cards (three in reverse) and drawn in a line-and-stipple manner strikingly similar to that of the copper engravings. Although the artist made obvious efforts to arrange his little figures plausibly among the scrollwork, he did not quite succeed in this. Curiously enough, the miniatures give the impression of having been traced or copied by some other mechanical means (see p. 65 below).

A single loose leaf, originally part of this same manuscript, is on exhibition at the Gutenberg Museum in Mainz. The text begins "Incipit liber Numeri Capitulum primum" and has an initial "L" with the deer scratching its head, from the Deer Suit, done by the same artist who painted the five figures in the manuscript. The blind-tooling on the contemporary binding of this manuscript is also found on the binding of the 42-line Bible in the possession of the Gutenberg Museum.²³ In view of this connection the manuscript can be dated around, or soon after, 1455.

The Mainz manuscript (Hs.II, 61) is also connected with a most fascinating unpublished manuscript in the University Library in Göttingen, to be discussed in the following chapter.

22. Hs.II, 61; written in a cursive bookhand (*lettre bâtarde*) in two columns on paper. The manuscript had long been in the possession of the Library of the old Mainz University and before then was a gift of the Capucine monks of St. Stephen's to the Augustinian Monastery in Mainz.

23. See Dr. Rudolf Stöwesand, "Der heutige Bestand der Welt an Gutenbergbibeln," in *Jahrbuch für Schreib- und Buchwesen*, II, no. 2 (July 1928) and no. 3/4 (October 1928). I am grateful to Dr. Presser of the Gutenberg Museum for having told me of this connection.



Figure 13. The model book in the Göttingen University Library. Patterns for initial letters and an ornament.



Figure 14. Border elements from the model book in the Göttingen University Library.

II

THE GÖTTINGEN manuscript is a beautifully preserved, complete illuminator's model book, produced in or near Mainz around the middle of the fifteenth century. Written on paper in the German language, it contains detailed instructions for drawing and painting initials, scrollwork, borders, and various ornamental units, accompanied by no fewer than forty-seven examples painted in color (figures 13–15).

**The Göttingen
Model Book**

It was naturally somewhat disappointing that careful study of the manuscript revealed no instructions for the painting of any kinds of figures or individual flowers like those in the earliest engraved playing cards or in the miniatures here described. Nevertheless, the little volume has unique importance. It describes, for instance, the painting of an illuminated initial: it is drawn first in outline, then the body is painted in, and finally the background is filled in. It also contains formulas for matching the colors on the two sides of twisting scrollwork—rose with green, red with purple, blue with gold, and so forth.¹

The Göttingen model book was found by Dr. Edmund Will, a retired librarian in Göttingen, about twenty years ago in the so-called Uffenbach Library.² He has characterized its dialect as Rhenish-Franconian with traces of Alemannic, which points to an origin in Mainz or somewhat south of that city. Dr. Will also discovered that the Göttingen copy of the 42-line Bible was illuminated according to the instructions of the Göttingen model book. I examined the Gutenberg Bible in Göttingen and found illuminated borders and initials (there are no figures) painted by at least two different hands. The work of one of these illuminators resembles that in the model book very closely indeed—important proof that the latter was not a theoretical or academic exercise but a practical tool used in the atelier. Comparison of border decorations in the Mainz manuscript Hs.II, 61 with those in the model book also shows a close relationship, as already pointed out, so close in fact that it looks as though both were the work of the same artist (figures 11, 13, 14).³ The miniature in the 42-line Bible in the General Theological Seminary in New York (see p. 13 above and figure 12) also seems to belong to the same hand.

1. It is to be hoped that this key monument of middle-Rhenish book art from the time of Gutenberg may soon be published in full. The manuscript is listed in the Göttingen University Library as Cod. Ms. Uffenb. 51, Vellum. 11 leaves, 155 x 105 mm.

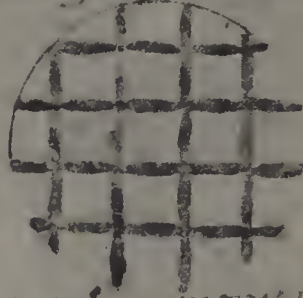
2. Letter to author, dated August 21, 1960.

3. Again I wish to express my gratitude to Dr. Presser for having pointed out to me the connection between Mainz MS Hs.II, 61 and the Göttingen model book.

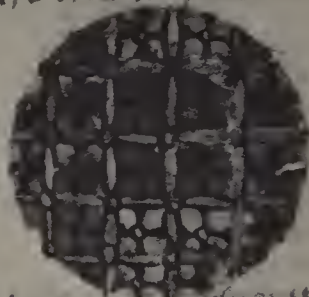
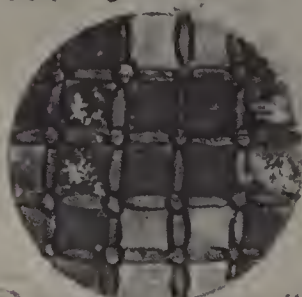
Die dritte feldung

9

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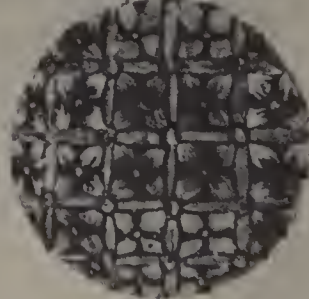
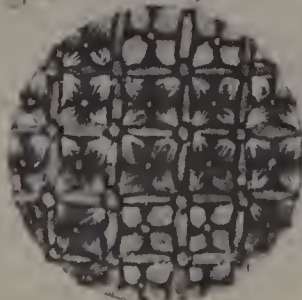


Figure 15. The model book in the Göttingen University Library. Detailed instructions for the drawing, painting, and gilding of an ornamental area.

This, then, means that a Mainz illuminator working in the city some time in the 1450s was the artist (if not also the author) who produced the scrollwork and decorations in an important model book which saw actual service; at the same time he used another model book, no longer surviving (as far as we know), from which he copied the small human figures and animals in at least one manuscript surviving to the present day. There is the suspicion, already mentioned above, that he may have used some means of mechanical transfer for his figures. If true this would attest to the active interest in the simplified and standardized multiplication of pictorial images prevalent in Mainz at that time.

The survival to the present time of an actual model book from Mainz and from the period in question is certainly strong evidence in favor of that other, lost model book, the existence of which is suggested here so strongly.

Moreover, it is possible to visualize quite concretely what this lost model book, whether a bound volume or in loose leaves, must have looked like. There is in the Städel Museum in Frankfurt am Main a very charming model leaf or page (figure 16) which has been identified as originating from the upper Rhine valley, related to the Master E. S., and dated about 1440–50. It measures about $8\frac{1}{4} \times 5\frac{3}{4}$ inches (210 x 149 mm.) and is painted in white brushwork on dark bluish-black paper, so opaque that no watermark is visible.⁴ It is obvious that the artist who prepared the leaf tried to fit as many figures as possible into the available space, creating a compositional effect that reminds one of the high numbers in the engraved playing cards, such as the Nine of Deer (G.20). The lying deer in the lower left corner of the model leaf, although somewhat faint, looks a good deal like the engraved deer (reversed) in the Three of Deer (G.15), and the wild man with the spear near the upper right corner looks like a close relative of the wildmen in the playing cards and their counterparts among the miniatures already discussed.

The Städel Model Leaf

The close relationship of these figures to those of the playing cards underlines the importance of the Städel leaf as circumstantial evidence for the existence of the hypothetical Mainz model book. These figures, and the manner in which the entire leaf is arranged, are a strong hint of what that model book must have looked like. It should be added, however, that the many heraldic and emblematic designs in the surviving leaf need not have had their counterpart in the hypothetical model book.

There emerges from all these connections and observations an amazingly complex and varied picture of book production pursued in Mainz around and after the middle of the fifteenth century.

4. The model leaf was catalogued by Dr. Edmund Schilling (formerly in charge of the Städel Museum's prints and drawings), as "Upper Rhenish Master, c. 1440–50. The relationship of the drawing to the engravings of the Master E. S. allows the conclusion that the drawing originated in the Upper Rhine region" (trans.). See *Handzeichnungen alter Meister im Städelschen Kunstinstitut*, Frankfurt am Main (1912 ff.), Lieferung XV, no. 2 (School of the Master E. S.); Erich Steingräber, "Studien zur venezianischen Goldschmiedekunst des 15. Jahrhunderts" in *Mitteilungen des Kunsthistorischen Instituts in Florenz*, X, no. 3 (1962).



Figure 16. The model leaf in the Städel Museum, Frankfurt am Main (original size).

At that time Mainz, one of the most ancient cities in all of Germany, still possessed much of its traditional prosperity and power. Strategically situated at the confluence of the rivers Main and Rhine, the city's economic success had earned it the name of "Golden Mainz." It was the seat of one of the largest and most important archbishoprics north of the Alps, and it boasted one of the finest of Germany's Romanesque cathedrals. The arts and crafts flourished; beautiful ecclesiastical manuscripts of the highest artistic quality were being written and illuminated; Gutenberg was composing and printing the 42-line Bible and preparing the complicated printing equipment for the 1457 Psalter. At this time also, successful efforts were being made to codify and standardize the production of illuminated borders and other decorative elements, by step-by-step instructions like those contained in the Göttingen model book. We have very strong reasons to believe that the illumination of figures and flowers was likewise guided by an important collection of models.

One cannot help but wonder just what Gutenberg's position was in this busy beehive.

Returning now to the discussion of further parallels between manuscript illumination and engravings by the Master of the Playing Cards, we find an interesting example in the collection of Mr. Mark Lansburgh, Colorado College. He owns three fragments from a leaf representing three sides of an illuminated border. One fragment, a horizontal piece measuring $12\frac{1}{4} \times 4\frac{3}{8}$ inches (311×111 mm.), has the grazing deer (=G.15, upper right) among blue and gray tendrils with burnished gold leaf fillers, which is virtually the same size as the engraving (see table, column XII; figure 17d). This is the deer that occurs in the Cleves Hours (Guennol Collection; see p. 32 below) and in the Giant Bible in Washington (figures 17a, b). It is certainly significant that in the Cleves Hours the deer stands with its four legs firmly planted on the ground, feeding on the foliage with open mouth.⁵ In the Giant Bible there is a noticeable attempt to connect the animal realistically with the foliage, although the artist did not quite succeed. In the Lansburgh fragment, however, the deer is precariously placed on a tendril, half floating in space, its open mouth gaping at a slightly fantastic insect (a dragonfly?). There was obviously no serious attempt to locate the animal realistically—the artist, although competent, was decidedly inferior to his two predecessors.

The style of the Lansburgh fragment indicates that the manuscript could well have originated in Mainz some time in the third quarter of the fifteenth century.

Two other illuminated manuscripts in the Mainz Stadtbibliothek and two elsewhere are of less importance for the central theme of our study than the manuscripts discussed so far, but they merit brief mention.

5. On one of the other fragments of the Lansburgh leaf is a distant relation of the "Snarling Goose" (G.27, top center). The similarity is not too close—many features are painted differently in the miniature—but there is probably some connection with the engraving.

Further
Miniatures after
1450



a



c

b



d



Figure 17. The grazing deer in (a) the Cleves Hours (Guennol Collection), f.90r, (b) in the Giant Bible of Mainz, Washington, D.C., f.2v, (c) in the engraved Three of Deer (G.15, top right), (d) in the Lansburgh fragment, Colorado College, Colorado Springs.

One is a psalter (Hs.II, 141, column XIII in the table; figures 3e and 18).⁶ The manuscript has the climbing bear and the deer scratching its head, both the same size as in the playing cards. They occur on f.25r of the *Psalterium*, in the lower margin, which has unfortunately been cropped. The two figures look decidedly like mechanical copies and are placed rather clumsily on scroll and flower. The climbing bear moves in exactly the same “abstract” space as in the playing cards. Neither the scroll nor the flowers (which seem also to correspond to the playing cards) are in the same style as the other illuminated borders and the amusing, brightly colored initials in this manuscript. The probable assump-



Figure 18. Portion of f.25r of a *Psalterium* in the Municipal Library, Mainz (Hs.II, 141).

tion that this manuscript, too, was written in Mainz would need to be corroborated by an examination of its calendar; but this has not yet been undertaken. There are no clues to the date, but the manuscript seems to have been made in the third quarter of the fifteenth century.

Also in the Mainz Stadtbibliothek is a manuscript prayer book (Hs.II, 247)⁷ which has on f.99r a rather coarse marginal scroll on which is the lying deer from the Three of Deer, smaller and in reverse (column XIV in the table; figure 19). Here, too, we may have a work from Mainz, but in the absence of further evidence the question must remain open. A reference to the Abbot of Sponheim, apparently Trithemius, who was not born until 1462, indicates that the manuscript was produced late in the century.

The University Library in Mainz (founded after World War II) owns a

6. *Psalterium cum Calendario et Initialibus*, Mainz, Stadtbibliothek, Hs.II, 141. Written on paper in fine, large, liturgical letters, this psalter was formerly in the old Mainz University Library and probably at one time belonged to a monastery of that city.

7. *Devotionale ex diversis collectum in unum*. Et primo quedā denote orōnes spiritual' abb'tis spanhēmēsis, Hs.II, 247; written on paper in a cursive Gothic script. With a later ownership entry: "Iste liber precarius donatus est Bibliothecae Conventus Mogentini ord. FF. Erem. S. S. Augustini 1744."

f.25r the walking doe (column XV in the table; figures 21 and 22). The little animals are very carefully painted and are skilfully and intricately worked into the scrolls.

For the dating of this manuscript there is the following important clue: Prince Adalbert became Archbishop of Mainz on May 8, 1482, after having been nominated as Statthalter (administrator) of Erfurt in 1472 and then (January 12, 1481?) made conservator of the Mainz archbishopric by Pope Sixtus IV. Since the *Breviarium Moguntinum* was written for the "Administrator" Adalbert, it can be dated before May 8, 1482. That the manuscript was written and illuminated in Mainz is not only suggested by the circumstances of its origin but also by the stylistic relationship of its miniatures with other manuscripts from Mainz.



Figure 20. Woodcut of the lying deer in the *Hortus sanitatis*.

The Berlin Print Room (*Kupferstichkabinett*) also owns an illuminated manuscript from Mainz, the prayer book of the Pfalzgräfin Margarethe von Simmern,⁹ which is dated 1481 and 1482 (column XVI in the table). In many respects it resembles the *Breviarium Moguntinum* just discussed. We find in the Berlin "Gebetbuch" on f.14 our old friend, the climbing bear, much smaller (285 mm.) than his engraved counterpart, and reversed (see figure 3f). On the same leaf, at the bottom of the right-hand border, sits a bird somewhat related to one in the Eight of Birds (G.27, bottom center).

In the last decade of the fifteenth century our little pictures finally appear in printed book illustrations. We find several of them in one of the most im-

The Hortus
Sanitatis
Woodcuts

9. MS 78B4; identified by Dr. Fedja Anzelewski, member of the Print Room staff, as an example of Middle-Rhenish book art, possibly a work of the Housebook Master. See his article "Das Gebetbuch der Pfalzgräfin Margarethe von Simmern" in *Berliner Museen*, VIII, no. 2 (November 1958).

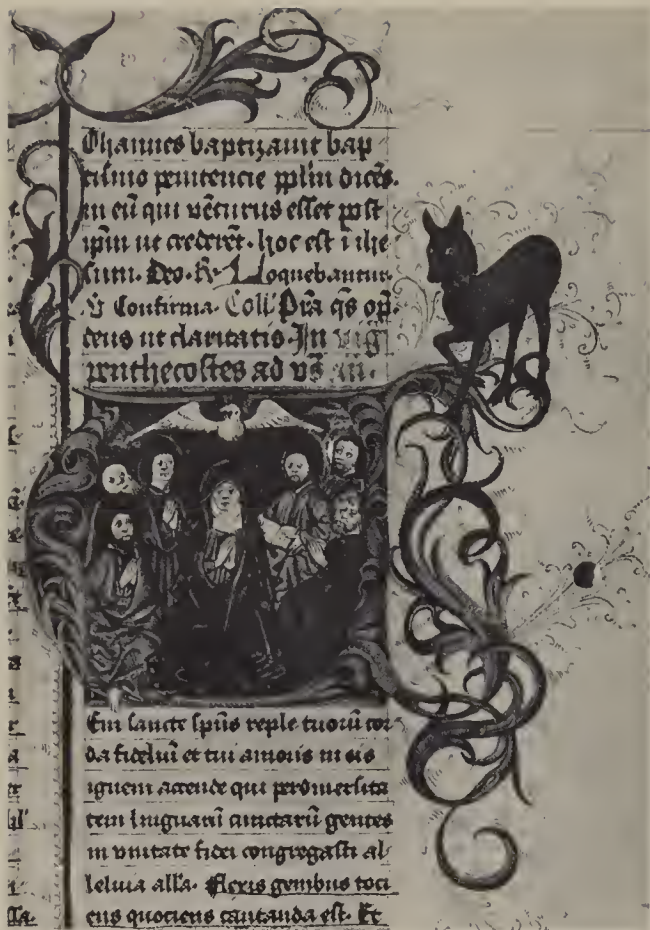


Figure 21. Walking doe, on f.25r of the *Breviarium Moguntinum*, Mainz University Library.

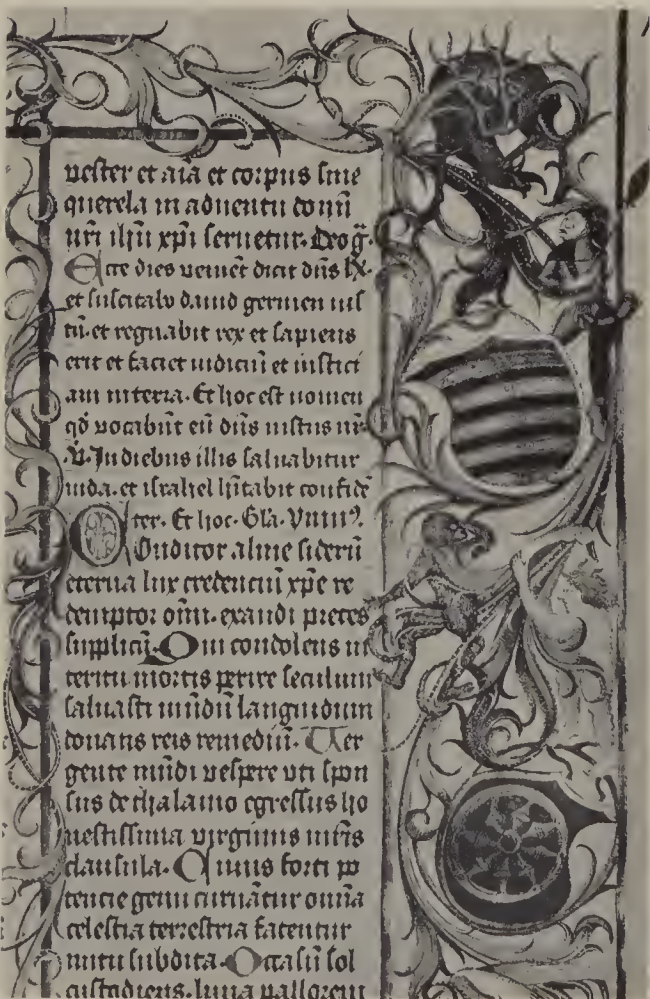


Figure 22. Deer scratching its head, on f.11r of the *Breviarium Moguntinum*.

portant early printed books, the famous *Hortus sanitatis* ("Garden of Health") (Mainz, Jacobus Meydenbach, 1491; Census H-486). This famous work, which covers botany, zoology, mineralogy (including their medical properties), and medicine, has well over a thousand illustrations in the text and seven full-page woodcuts. On the large woodcut at the beginning of the book "De Animalibus" is the lying deer (G.15) quite closely copied (figure 20)¹⁰ and next to it is one of the bears (G.5, G.11, center right), fairly similar. On the full-page woodcut for "De Avibus" is the stork with the snake in its beak (G.23, lower right, reversed; figure 6d) and, at least somewhat related, a hissing goose similar to G.27, top center. It is a rather interesting study in the nature of graphic media to trace the successive treatment of the same subject first in finely painted miniatures, then in sophisticated copper engraving, and at last in the popular idiom of the woodcut.

In summing up the newly discovered miniatures discussed so far, we can say that they occur in no fewer than eight manuscripts, of which some are certainly of Mainz origin, while others were probably, or possibly, also produced there. The manuscripts can be dated between about 1452 and 1482. Furthermore, we have the related miniatures in the Gutenberg Bible in the Scheide collection and in other early Mainz imprints.

The largest number of connections with the Master of the Playing Cards can be found in the earliest manuscript produced after the middle of the century—that is, the Giant Bible of Mainz in Washington. In the other early examples, too, we find entire groups of parallels, while in the later manuscripts there are only isolated examples. The comparative table shows this very clearly.

This observation will have a significant bearing on the interpretation of the evidence presented so far. However, before such an interpretation can be attempted, it is necessary to examine certain earlier miniatures, produced before the middle of the century, which also show connections with the first engraved playing cards.

10. See Lehrs, op. cit., Vol. I, p. 146. Nissen, *Botanische Buchillustration* (Stuttgart, 1951), p. 34, merely notes that some of the animal pictures in the *Hortus* resemble the work of the Master of the Playing Cards. Reimar Walter Fuchs in his "Die Mainzer Frühdrucke mit Buchholzschnitten 1480–1500," in *Archiv für Geschichte des Buchwesens* (Frankfurt, September 22, 1958), p. 1229, refers only to the Master E. S. as a source.

III

The Cleves Hours

ONE OF THE earliest of all the illuminated manuscripts that have miniatures corresponding to the engraved playing cards is the beautiful Book of Hours of Catherine of Cleves. This famous codex exists today in two separate portions, each in the possession of a different owner. One part was acquired for the so-called Guennol Collection, New York, through H. P. Kraus, the other belongs to the Pierpont Morgan Library in New York (m. 197).¹

The illuminations in this manuscript are the work of an artist of the highest caliber who is named from this manuscript the "Master of Catherine of Cleves," or the "Arenberg Master," from the family that owned the manuscript long before the parts were brought to this country. The master is one of a group of three or four miniaturists who worked in and around Utrecht, and he is one of the most distinguished artists of the northern Netherlands of the period.

Close examination has yielded three miniatures in the Hours closely related to those made by the Master of the Playing Cards (see column I of the table). In the center of the lower margin under the miniature of the Adoration of the Trinity, f.90r in the Guennol manuscript, is the grazing deer from the Three of Deer, smaller, but with proportionately larger antlers (figure 17a). Two fine birds are in the Pierpont Morgan Library portion, one like that on the Three of Birds, p. 29, in the middle of the margin under the miniature of St. Michael Weighing Souls (figure 23), the other, corresponding to the same engraved card, in the center of the margin under the miniature of the Judgment of Solomon, p. 53 (figure 24). Both birds are decidedly smaller than their engraved counterparts.

While these three miniatures are the only ones in the Cleves Hours that can be directly related to the engravings, there is a host of others delightfully painted in very much the same playful spirit, style, and technique. There are, especially, many other birds, but also deer (e.g. the lying deer, Guennol Collection, f.2) and delicate little flowers which remind one of the playing cards. Like the miniaturist of the Giant Bible in Washington, the Arenberg Master commands a rich repertory from which he seems to draw easily and spontaneously.

There is some uncertainty about the dating of the Cleves Hours. John

1. See John Plummer, *The Book of Hours of Catherine of Cleves* (New York, 1964). This book was published on the occasion of a most skilfully arranged exhibition of both portions of the codex at the Pierpont Morgan Library in September 1964. See also John Plummer, *The Hours of Catherine of Cleves* (New York, 1966), containing reproductions of all pages with miniatures.



Figure 23. Page 29 of the Cleves Hours (Pierpont Morgan Library).

Plummer,² who carefully weighed all available evidence, reached the conclusion that a date of 1435 “cannot be wide of the mark by more than five years.”

Lehrs, who did not know of the Cleves Hours, mentions three manuscripts before 1450 with miniatures that correspond to the engraved playing cards.³

Other Manuscripts
before 1450



Figure 24. The engraved Three of Birds (G.22).

We have already discussed the *Chronique de Hainault* (see p. 8), which Lehrs erroneously made the cornerstone for the dating of the Master of the Playing Cards. We have shown why the year 1446, the date of the completion, not of the illumination but of the text of volume I, has no significance as chronological evidence.

The second manuscript cited by Lehrs is a *Graduale* in Neustift, near

2. *The Book of Hours*, pp. 21, 22.

3. Max Lehrs, *Geschichte und kritischer Katalog des Kupferstiches im XV. Jahrhundert* (Vienna, 1908), I, pp. 142 ff.

Brixen, undated, but apparently produced about 1442–46.⁴ A single bird is the only connection with the playing cards. The third is the *Miroir de la Salvation Humaine* in the Bibliothèque Royale in Brussels, written by Jehan Miélot in 1448, which has a bird and a bear (figures 25, 26). Both are pen-and-ink



Figure 25. Bird on f.47r of the *Miroir de la Salvation Humaine*. Brussels, Bibliothèque Royale.



Figure 26. Walking bear on f.41r of the *Miroir de la Salvation Humaine*.

drawings, undoubtedly not spontaneously conceived by the illustrator but copied from models: the bear is used quite mechanically, without any attempt to connect him with the scenery.

Lehrs has also pointed out that Jehan Miélot's miniatures of the Passion of Christ in the Brussels *Miroir* were copied from engravings of the so-called Meister der Liebesgärten. Whether this really was the case would have to be re-examined in the light of the new evidence communicated here. In one instance, namely in the relationship of a large number of grisaille paintings in undated breviaries to the engravings of the Meister der Liebesgärten, Lehrs himself admits the possibility of a lost common source.⁵ If he had known the Cleves Hours, the Giant Bible of Mainz, or the Scheide Gutenberg Bible, he would probably have changed his concept of the engraved playing cards as the primary source of all miniatures and other works of art displaying a related iconography.

At this point mention should be made of a distinguished group of manuscripts produced in Savoy between, roughly speaking, 1440 and 1470. These

**The Savoyard
Manuscripts**

4. Ibid., p. 143.

5. Ibid., p. 308, and Lehrs, *Meister der Liebesgärten* (Dresden, 1893), pp. 7–13. He found the grisaille miniatures in a number of manuscript breviaries in Brussels, Antwerp, the Hague, Hanover, Oxford, and so on. Both the artistic superiority of the miniatures over the engravings and the observation that they belonged stylistically to "an older type" than the engravings, made him doubtful of the priority of the engravings.

manuscripts are being studied by Miss Sheila Edmunds, who has found in no less than six of them seven miniatures which correspond to figures in the engraved playing cards.⁶

These are the manuscripts:

1. Apparently the oldest of these codices is a *Missale Romanum* made for Felix V, Duke of Savoy, c. 1443, now in Turin (table, column II; figure 27; see also figures 19 and 20). It has on f.4v the reclining stag (=G.15). The relationship is very close, the manner of drawing almost identical, except that the shading along the back of the stag runs more or less vertical in the manuscript, but horizontal in the engraving.⁷

The following two manuscripts have been assigned the tentative date c. 1445-50:



Figure 27. The stag on f.4v of the Missal of Felix V, Duke of Savoy.

6. I am profoundly grateful to Miss Edmunds, who is assistant professor of the history of art at Wells College, Aurora, New York, for having shared her discoveries with me, permitting me to include examples in this study and providing me with photographs. Miss Edmunds has reported some of her findings in "The Missals of Felix V and Early Savoyard Illumination," *Art Bulletin*, XLVI, no. 2 (1964). She is at present preparing further studies of the Savoyard manuscripts for publication.

7. The *Missal* of Duke Felix V of Savoy is in the Archives of Turin and is unpublished, but see Edmunds, op. cit.

2. A *Missale Romanum* in the Escorial has on C6 f.1 the bird preening its feathers which occurs in the engraved Eight of Birds (G.27, bottom right). The relationship appears to be fairly close (table, column III).⁸

3. A *Book of Hours* (owner unidentified) has on one of its lower margins a fine lion (G.4, upper right), attacked by two men with clubs (table, column IV; figure 28), similar to a scene in the Scheide Bible (figure 5). Many of its miniatures are ascribed to Peronet Lamy (1432–c. 1453) who was employed for the most part by the House of Savoy. Miss Edmunds doubts whether the marginal illuminations should really be dated as early as the miniatures. They seem to have been added later.⁹



Figure 28. Lion attacked by club-swinging hunters in a Savoyard *Hours of the Virgin*.

4. The *Book of Hours* of Duke Louis of Savoy, in the Bibliothèque Nationale in Paris, c. 1450–55 (table, column V), has many delightful drolleries in the margins, including a pig playing the bagpipes, curious birdmen, and so forth. On f.190 we find the stag scratching its head (=G.15, upper left; compare figures 18, 22, 29, and 30), as part of a small miniature with its own background. The deer has the earmarks of a copy: it is a little clumsily done and its antlers disappear under the upper frame of the miniature.¹⁰

8. I have seen only a small photograph which does not show detail. This *Missale Romanum*, ms.b.I.3 in the Escorial, was officially catalogued by Antolin (IV, p. 520) and is unpublished.

9. The manuscript is described and illustrated under no. 24 in Maggs Brothers' Bulletin no. 3, *European Miniatures, Illumination and Drawing* (London, September 1965). For Lamy's work see Edmunds, op. cit.

10. The *Hours* of Duke Louis, B.N., ms.lat. 9473, has been published in facsimile, *Le Livre d'Heurs du Duc Louis de Savoie*, with preface by Daniel-Rops, introduction by Clément Gardet (Annecy, Savoy, 1959). See also Edmunds, op. cit.

5. The *Book of Hours* of Clermont-Ferrand (table, column VI) dated by Porcher c. 1460¹¹ has on one of its pages the same bearded hornblower who appears in the lower left corner of the Jack in the Figure Suit (G.42), only larger (c. 2¼ inches or 55 mm. high). It is similar to the figure which we find reversed in the Giant Bible of Mainz in Washington, D.C. (see chapter I, footnote 5, and frontispiece, upper left).

6. The latest of the Savoyard manuscripts included here is the *Book of Hours* of Saluzzo in the British Museum, dated c. 1460–70 (table, column VII). There are two miniatures corresponding to the Human Suit, one of them, on f.16, quite close to the lutenist in leafy garb on the Wild Man Five (G.1, lower left). The figure in the center of the same playing card, the bearded and hairy wild man with a long staff in his hands, is similar to a miniature on f.19. Although this figure is not hairy and not carrying a staff, but gesturing instead with the right hand, the posture is exactly the same as in the engraving.¹²

Five of the Savoyard manuscripts, then, have each one miniature, and one manuscript has two miniatures related to the engravings. In other words the occurrence is decidedly sporadic. Favored subjects are the wild men, of whom two are in one manuscript (no. 6 above), one in another (no. 5), while another two, not alike or even similar to engravings, are seen attacking a lion (no. 3). There are two deer (nos. 1 and 4) and one bird (no. 2).

There can be no doubt that the Savoyard manuscripts will play an important role in any future study of the transmission of this entire iconographic cycle from early miniatures to the engraved playing cards and back again into miniatures and other forms of illustration (see footnote 15 on p. 44). However, the uncertainty of the dating of the manuscripts poses some difficult questions. For reasons explained later the Savoyard manuscripts should not at present be considered as part of the chronological evidence to be discussed on the following pages.

There is also uncertainty concerning the date of a very fine monument of the fifteenth-century goldsmith's art, two tankards with lids (*Deckelbecher*) in the Kunsthistorisches Museum in Vienna (figure 29). We find in the enameled decorations three small animals which correspond closely to figures in the engraved playing cards. The lying deer (=G.19, center right, G.18, bottom center, reversed) and the bird scratching its head (=G.27, bottom left) are found in both tankards. In addition, one of the vessels has the deer scratching its head (=G.15, top left). We also find figures quite similar to several of the

The Vienna Tankards

11. *Book of Hours*, Bibliothèque Municipale, Clermont-Ferrand, ms. 84, c. 1460. The codex was shown in the big Paris 1955 manuscript exhibition and is listed as no. 299 in Bibliothèque Nationale, *Manuscripts à peintures du XIIIe au XVIe siècle* (Paris, 1955).

12. The *Hours* of Saluzzo, London, British Museum, add.ms. 27.697. Pages from the manuscript are reproduced in British Museum, *Schools of Illumination* (London, 1930), VI, plate 11b, and in Millar, *Souvenirs de l'Exposition de Mss. françaises à peinture au B.M.* (Paris, 1933), plate LIII. See also Edmunds, op. cit.



Figure 29. One of the two tankards in the Kunsthistorisches Museum, Vienna.

playing cards, such as the standing lion (=G.3, top right), the hissing goose (=G.25, center left), and another bird (=G.27). The two tankards were discussed by Erich Steingraber,¹³ who, after first assigning them to Venice, identified them as Upper-Rhenish goldsmith work, made under Netherlands influence in the second quarter of the fifteenth century.

The Netherlandish source of this art accords well with the early appearance of the "playing card iconography" in the Cleves Hours and also in Jehan Miélot's *Miroir de la Salvation Humaine*. Steingraber's further comment is also significant. He explains that the style of decoration of the Vienna tankards, composed of single figures loosely strewn over the surface ("streumusterartig aus Einzelfiguren zusammengesetzt"), can be taken as evidence of its derivation from a model book. He points out that the Upper-Rhenish model leaf in the Städel Museum (discussed on p. 23 above) is closely related in style.



Figure 30. Jewel box in cuir ciselé technique (lid only shown here), in the collection of Thomas Marston, The Plains, Virginia.

The popularity of the iconography of the Vienna tankards in other *objets d'art* can be seen in the deer scratching its head (=G.15, top left) on a charming little jewel box in cuir ciselé technique (age undetermined) in the collection of Mr. Thomas Marston (figure 30).

As in the case of the Savoyard manuscripts, I feel some reluctance in accepting the Vienna tankards as chronological evidence. Unlike many of the

13. In his "Studien zur venezianischen Goldschmiedekunst des 15. Jahrhunderts" in *Mitteilungen des Kunsthistorischen Instituts in Florenz*, X, no. 3 (1962), figure 25.

other manuscripts and printed books, they have no dates attached to them, and the designation "second quarter of the fifteenth century," although generally plausible, is a little too vague for our purposes. They may have been made around, or perhaps even slightly after, the middle of the century. It is necessary to emphasize that the year 1450 is a crucial point in the chronological relationship of the engraved playing cards with the corresponding illuminations.

There is no question that the examples cited by Lehrs before 1450 show only sporadic and isolated parallels between miniatures and engraved playing cards. The picture changes radically after 1450. As soon as the period around 1454 is reached, we find entire groups of parallels.

Lehrs mentions a *Liber Alexandri de Proeliis* in the Stiftsbibliothek in St. Gall, written in 1454 by Hans Frauendorfer vom Dürrenstein for Duke Albrecht, Pfalzgraf bei Rhein. It has a bear, a bird, and several roses and cyclamens. The manuscript was examined in spring 1965 by Miss Elgin Vaassen, who found that the illuminations are in the characteristic Viennese style of the period.

Lehrs also mentions a two-volume translation of Livy's *Roman History* ("Histoires Romaines") in the Bibliothèque de l'Arsenal in Paris, also dated 1454.¹⁴ This manuscript has no fewer than nine birds (including some repeats) and two animals from the Deer Suit.

This first occurrence of entire groups of parallels to the playing cards corresponds very neatly with the appearance of entire groups of miniatures in the Giant Bible in Washington, the text of which was completed in 1453, and in the Gutenberg Bible in the Scheide collection.

We have suggested earlier that the miniaturists of the Giant Bibles of Washington and Würzburg, and of the Scheide Bible, worked from a model book available in Mainz in the 1450s. This same model book was, it seems, also accessible to the Master of the Playing Cards. However, there is no reason to assume that it must also have been used for the miniatures in the *Liber Alexandri* in St. Gall, nor for the Livy translation in Paris, both of which are dated after 1450. For these manuscripts, as well as for the other, later ones discussed above, Lehrs' concept of the engraved playing cards as models seems the proper explanation.

Yet another illuminated manuscript, which contains many marginal miniatures undoubtedly modelled on the playing cards, appeared when this book was already in page proof. It is a large *Antiphonal* of North-Netherlandish origin, acquired by H. P. Kraus in May 1966. In the eighteenth century it belonged to the St. Salvator monastery in Antwerp. Among its marginal miniatures the following correspond to figures on engraved playing cards (all reversed except the hunted lion):

14. Both these manuscripts are mentioned *ibid.*, pp. 143-44.

1. The climbing bear, f.4r, lower right margin (=G.2); 2. the snarling goose, f.108r, lower left margin (similar to G.27); 3. the reclining lioness, f.131r, right margin (somewhat similar to G.11, but the tail raised); 4. the preening bird, f.131r, lower margin (similar to G.29, upper right); 5. a lion attacked by a hunter with a spear, f.156r, lower margin (distant relation of G.3, upper right); 6. standing bird with wings spread, f.169v, lower left margin (similar to G.28, bottom center); 7. bird with one leg raised, f.172r, upper left margin (similar to G.28, center right); 8. bird picking at a flower, f.172r, lower margin (similar to G.28, lower right); 9. a bird, f.187r, lower margin (distant relation of G.23, lower left); 10. a lioness, f.192r, lower left margin (=G.4, center); 11. a bird, f.193r, in initial "R" (very distant relation of G.28, upper left); 12. preening bird, f.200r, lower margin (fairly close to G.25, lower right); 13. a little rose, f.200r, lower margin (similar to some of the blossoms on the Flower Nine, G.35).

Perhaps the most interesting miniature is the climbing bear (figure 38 on page 78), unfortunately not very well preserved. It is possible to see clearly, however, that the animal is painted without any attempt at connection with the floral decorations of the border. In other words, the bear appears as in the playing cards and this, in turn, is strong evidence that this miniature (and obviously the others mentioned here) were copied from the playing cards. Accordingly, we can date the illuminations sometime after 1453/54. Gratifying confirmation of this assumption is found in the miniature of St. Bernard kneeling before the Virgin on f.188v, where the date 147? (the last figure is not readily distinguishable) appears on a speechband emerging from the mouth of the saint.

The chronological circumstances discussed above make it highly credible that the playing cards were put on the market in 1453 or 1454. This does not mean, of course, that the master began engraving the plates only around that time. It is important to realize that we do not know just when he began this work. It may have taken him several years, very probably including a preparatory experimental period.

The question of just when the Master of the Playing Cards began his work is only one of the many problems encountered by anyone attempting to interpret the factual evidence presented so far. For instance, the model book postulated for Mainz around 1450 raises important questions which are by no means easy to answer. Did the model book exist before that time and if so, when was it put together?

There is no pressing reason to insist that the Master of Catherine of Cleves, working around 1435 in the northern Netherlands, or the illuminators of the Neustift *Graduale* (c. 1442-46), Miélot's *Miroir de la Salvation Humaine* (1448), or the Savoyard manuscripts must have used the Mainz model book. It is possible that the reverse was true. The magnificent miniatures in the Cleves Hours could themselves have served as models. Their spontaneous originality

The Publication
Date of the
Playing Cards

The Hypothetical
Mainz Model Book

shows up very clearly in comparison with the subsequent portrayals of the same scenes in later miniatures. A comparison of the Cleves Hours deer with its counterpart in the Giant Bible in Washington and in the Lansburgh fragment (figure 17) reveals an eloquent pattern of increasing detachment from a logical spatial arrangement and, toward the end, of declining artistic quality.

It is also quite possible that the Mainz model book had a predecessor, or perhaps even a line of predecessors, from which it was derived. Somewhere behind these possible ancestors one might find the original miniatures that served as models. The presence in the Mainz repertory of hunters and their prey suggests that one of the great illuminated hunting books, the *Livres de Chasses*, may have provided some original models; the presence of bears in many characteristic postures also points to some such source. At this point we cannot say whether the hypothetical model book of Mainz was derived from several sources and perhaps assembled over a period of several years, or whether it was copied, within a limited space of time and with few or no alterations and additions, from another work of the same kind. A detailed investigation of its possible sources among earlier illuminated manuscripts would be a rewarding project.¹⁵

We must also ask ourselves who originally owned the model book. Who controlled its use? Was it perhaps Johannes Gutenberg himself? This, too, is a question that we cannot answer at present.

The crux of the matter is whether the apparent chronological and geographic concurrence of the printing of the 42-line Bible on the one hand, and of the first engraved playing cards on the other, should be looked upon as a coincidence without deeper historical significance or whether there is an important connection between the two.

15. Miss Dorothy Miner, Librarian of the Walters Art Gallery in Baltimore, has been working for some time on medieval model books and plans to investigate the sources of the illuminator of the Giant Bible of Mainz in Washington. Among other sources she was kind enough to point out to me the occurrence of some miniatures corresponding to the engraved playing cards in the manuscript of Gaston Phébus Conte de Foix's *Livre de Chasse* in the Bibliothèque Nationale in Paris (see the *Reproduction réduite* published by the B.N.). The Walters Gallery owns a later fifteenth-century manuscript (De Ricci, *Census*, no. 243) which shows a number of the animals, etc.

Scheller's recently published study on model books, mentioned above (chapter I, footnote 12), shows no direct connection with the hypothetical Mainz model book, although he describes some fifteenth-century model books which are at least thematically related. The rise of some kind of models since as early as the first century B.C. is well documented in Scheller's publication. There is also evidence that models were used by animal painters in Pompeian frescoes. Wilhelmina Jashemski, in her article "Pompeii," in *Natural History* (December 1964), p. 40, says: "An examination of the animal paintings at Pompeii shows that some of the fauna are in almost identical poses. For example, the picture of a leopard attacking a bull in the House of the Hunt is almost a mirror image of a similar leopard and bull in the animal painting in the House of T. D. Panthera at Pompeii. The stag in the latter painting is the same as the stag in the House of Lucretius Fronto. Other duplicates could be pointed out. Painters at Pompeii apparently had samples and painted pictures to order. A modest inhabitant of a small town could order as elaborate a painting as he desired."

Part Two: The Interpretation

IV

IN A DISCUSSION of the meaning of the evidence so far reported in this study we must dissociate ourselves from the conventional concept of Gutenberg's invention as exclusively the "black art" of printing black letters on white paper or parchment from movable type. What he visualized was something even greater, even more magnificent. There can be no doubt that his powerful creative dream was the reproduction in print of the great medieval liturgical manuscript in all its colorful beauty. In other words, he was developing a facsimile process that would enable him to reproduce much less expensively, much faster, and in multiple copies, not only the black text of the scribe and the red writing of the rubricator—he also hoped to produce by typographic means the entire system of manuscript decoration; that is to say, not only the colored initials with their interconnecting calligraphic polychrome ornamentation, but also the illuminated scrolls and miniatures. He attempted to realize this grandiose plan by replacing, step by step, the interlocking successive manual procedures with mechanical processes of reproduction.

It is well to remember that at this time Gutenberg was still associated with Johannes Fust, the wealthy Mainz goldsmith and financier, who had lent him considerable working capital. Their partnership was to end abruptly in the year 1455. In a document known as the "Helmarspergersche Notariatsinstrument," dated November 6, 1455, and still preserved in the Library of Göttingen University, Johannes Fust sued for the return of the loan and, upon Gutenberg's failure to pay up, gained possession of his printing workshop and equipment. Some time before that day a young manuscript scribe, named Peter Schöffer, had returned from Paris to Mainz, near which he had been born, and had joined Gutenberg's establishment. After November 1455 we see Schöffer associated with Fust (whose daughter he married) in the famous partnership of Fust and Schöffer. Their names and the date 1457 are found in the colophon of a beautifully printed psalter, which they completed during that year.

That the new interpretation of Gutenberg's intentions communicated here is not a fantastic hypothesis, but corresponds to the facts, is clearly evident from the observation that the inventor actually took most of the necessary steps on the road to this accomplishment. In the 42-line Bible we see the complete and permanent solution of the problem of black and red printing. In the magnificent Psalter of 1457 we find the solution of the next and highly complicated problems: typographic production of polychrome initials and of calligraphic ornaments that had been drawn in the margins of manuscripts with a very fine pen in inks of several colors. To be sure, we do not see these solutions until after

Gutenberg's tragic separation from the first Mainz printing office around 1455, that is, in the period when his printing equipment was already in the hands of Fust and Schöffer.¹ However, no serious student of early printing doubts today that more than the two years between 1455 and 1457 were necessary to solve the basic problems of printing the two-colored psalter initials and their calligraphic ornamentation, and actually to produce the large number of intricate printing blocks which were first used in the Psalter of 1457. That his techniques were too impractical to endure is irrelevant in this connection. The essential point is that these processes represent an integral part of the original creative plan of the inventor, the solution of which brought him significantly nearer to his final goal.

And why, we must now ask ourselves, should he have stopped short of the final steps? Is it not entirely possible, perhaps even probable, that he also experimented with the typographic reproduction of painted miniatures and ornaments? Why should the master, who vigorously and without inhibitions undertook the solution of incredibly difficult problems, who succeeded in creating typefounding, composition, and the printing press virtually out of nothing—why should he have avoided the last step in his quest for perfection? To say that the printing of painted miniatures and border ornaments was *a priori* too difficult for Gutenberg to contemplate, is a fallacious conclusion after the fact. That no evidence of at least a first, tentative exploration of these problems has survived—or we should perhaps say has so far not been recognized—does not eliminate the inherent possibility or even probability of such experiments.

We do not know the exact time and sequence in which Gutenberg began to occupy himself with the various separate problems that make up his invention. We do not know the detours and dead ends of countless unsuccessful attempts from which the fruitful and practical solutions finally emerged. But we do know the order in which these solutions were put into practice—we can see this in the surviving monuments of the first Mainz printing office. If we face the possibility that the typographic reproduction of painted miniatures and border ornaments was a part of his program, we must accept the fact that time ran out on the inventor before he was able to work out these final problems.

Therefore, is it not conceivable that there is a meaningful connection between the engravings of the Master of the Playing Cards and Gutenberg's possible attempts to reproduce illuminated manuscript decoration in print? To be sure, this is a revolutionary thought which sharply contradicts the firmly anchored historic concept of the totally autonomous origins of typographic printing by relief, and of copper engraving in intaglio.²

1. See my *Peter Schöffer of Gernsheim and Mainz* (Rochester, 1950) for the printing technique of the 1457 Psalter.

2. The reader not familiar with these terms will find them explained in my *The Life of the Book* (London and New York, 1957).

In pursuing the possibility of a common origin—or at least of a common early development of the two processes within the framework of Gutenberg’s experiments—I would like to have it understood that I am proposing a hypothesis but not attempting to prove a fact. What I wish to suggest here is a possible interpretation of surprising discoveries mainly in order to acquaint students of early printing with these connections and to enlist their collaboration; I do not claim at this point to be offering a binding and permanent solution.

Certain obvious objections are not too difficult to eliminate. The apparent contrast, for instance, between the relief process of Gutenberg’s typographic system and the intaglio process of the Master of the Playing Cards can be dissolved at once when one recalls that Gutenberg’s entire typographic invention is based on the counteraction of relief and intaglio elements—“mira patronarum formarum que concordia,” as the colophon in the *Catholicon* (Mainz, Johann Gutenberg?, 1460, GW 3182) states it. The punch produces the matrix, the matrix the type, the type the printed letter on the page.³ Why is it not possible to consider the engraved copper plate as a “matrix” from which a relief plate for picture printing was to be produced? This conforms with the laws of Gutenberg’s typographic principle.

Gutenberg was trained in the craft of the goldsmith; he was a most inventive, able, and experienced metal technician. But copper engraving, also, originated from the art of the goldsmith. Little as we know about the earliest beginnings of copper engraving and much as opinions differ about the place and time of that invention, the origin of the first intaglio process from the craft of the goldsmiths is recognized by all historians.

When I communicated these thoughts to Dr. Konrad F. Bauer (Art Director of the Bauer Type Foundry in Frankfurt) in 1961, he replied, to my surprise, that they would fit rather well into certain observations he had made about the printing process of the calligraphic ornaments in the *Psalter* of 1457. He explained that he had long doubted the generally accepted idea that the very delicate lines of these ornaments could really have been cut with an engraving tool as relief ridges. Were not these printing blocks the result of another process? He suggested the following:

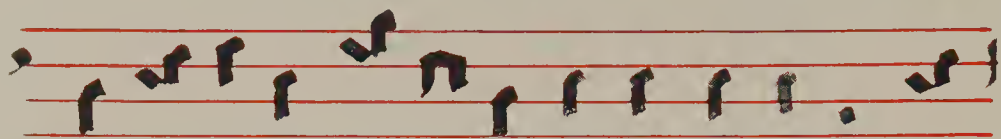
These ornaments were cut into a metal plate and a relief plate was made from it by embossing or casting; for instance, the original plate could have been plunged, if necessary weighted down, into a pool of molten type metal. By this method casting molds were produced from woodcuts, from which by the same method a positive relief plate was made. It would also be conceivable that the engraved plates, if they consisted of a sufficiently hard metal, brass for instance, were embossed into a soft lead plate. For this, however, one would probably have needed higher pressure and a suitable

**The Technical
Nature of
Gutenberg’s
Invention**

**The Evidence of
the 1457 *Psalter***

3. Ibid., pp. 75–77.

Alleluia alleluia alleluia alleluia



Alleluia alleluia alleluia alle

Cap. **E** mpti estis p̄rio ma

in corpe v̄ro. Deo g̃. **Ab** o

et ab alienis parte seruo tuo

supplicibz tuis tribue largita

rāte sedātes consolationē p̄l

re: Et fa: p̄ dñm n̄m iesum.

Berna pedibz **A**

meis verbū tuū:

mei seminis mei, **T**

re iudicia iusticie tue,

quag: dñe vivifica mi

luntaria oris mei bene

cia tua dñe mo **U**nim

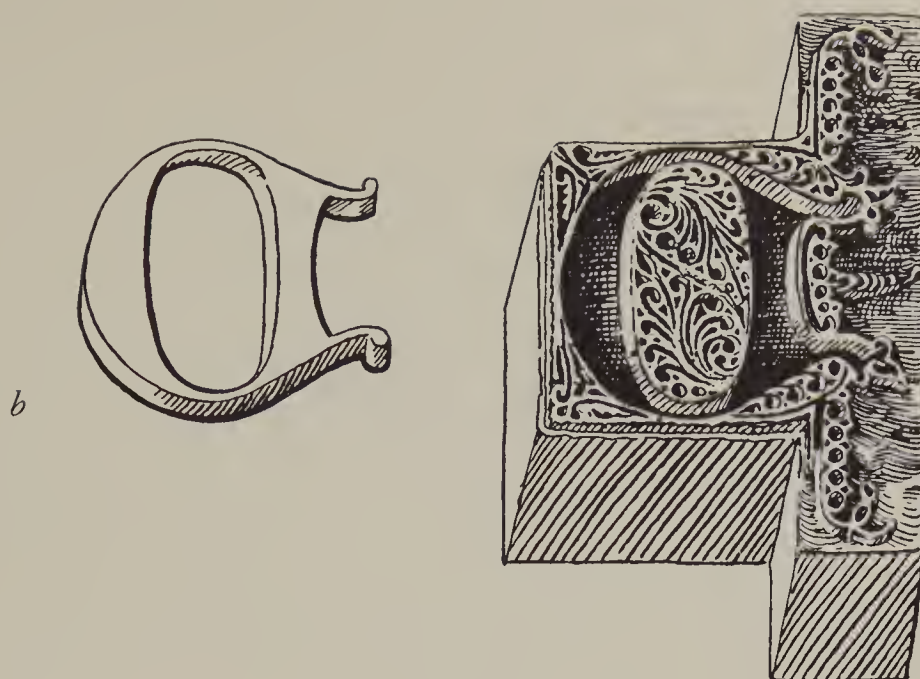


Figure 31. Reconstruction of the printing technique used in the 1457 Psalter. (a) Portion of a page from the technically similar 1459 edition, printed in black, with initial letter "L" in blue (here shown as gray) and the calligraphic ornament in red (original size). (b) Heinrich Wallau's reconstruction of the metal blocks used for the two-color initials. (c to e) Dr. Konrad F. Bauer's reconstruction of the metal blocks used for the calligraphic ornaments: left, engraved plate; center, relief plate cast from it; right, impression from the relief plate.



c



d



e

press. A certain difficulty in each case would be the even depth of the engraving of the original. Whether the entire process is at all practical I dare not say for the time being. I still hope to try this some time in our punch-cutting department, but so far have not had the opportunity.⁴

I have made the long-planned experiment. A portion of the ornaments of an initial was copied by engraving in brass, and a relief plate made and printed. The result is surprisingly similar to the impressions made at the Fust-Schöffer printing press.⁵ [See figure 31c-e.]

“Getté en Molle”

There is documentary evidence that before and around the middle of the century entire books were printed from plates cast from wooden or metal intaglio plates, by a process known as “getté en molle.” A good, brief account of this process is found in Aloys Ruppel’s biography of Gutenberg.⁶ We learn there that the Abbot Jean-le-Robert of St. Aubrai in Cambrai entered in his diary that in January 1446 he bought in Bruges a *Doctrinale* which was “getté en molle.” In 1451 the same abbot had purchased for him in Valenciennes another *Doctrinale* printed by the same process.

The word *molle* or *moule*, Professor Ruppel goes on to explain, refers to a mold, a printing plate produced by carving (engraving or cutting), generally on wood, but occasionally on metal or even stone. The producers of such plates were called in French “tailleurs de moules,” in German “Formschneider,” in Flemish “figursnider, printsnyder” or “printer, prenter.” The process of producing and printing from the plates is usually called “mettre en molle,” or “escrire en molle.” The less usual “getter [= jetter] en molle” apparently describes the production of a metal printing plate by casting from a mold in the manner of modern stereotyping.

A Modern Experiment

Now, what is the possibility of obtaining a relief plate from a copper engraving? Much to my surprise, I learned that an experiment to determine this possibility had been made by Mr. Lessing Rosenwald. Some years ago he conceived a similar idea and had a cast of fiberglass made from a copper plate by Ian Hugo and then asked Benton Spruance to try to print from the casting.⁷ Mr. Rosenwald was kind enough to send me for examination the original copper plates, the plastic cast, and several impressions taken from the plastic cast (figure 32).

He explained that printing from the plastic cast was exceedingly difficult because the height of the printing surface above the casting is too slight to permit clean printing.

The bearing of Mr. Rosenwald’s experiment on the suggestion that Guten-

4. Translated from a letter of August 8, 1961.

5. Translated from a letter of August 25, 1961.

6. Aloys Ruppel, *Johannes Gutenberg, sein Leben und sein Werk* (Berlin, 1947), p. 189.

7. Letter dated October 5, 1962 from Mr. Rosenwald to the author.



Figure 32. Lessing J. Rosenwald's experiment. (a) Original print of a copper engraving by Ian Hugo. (b) The copperplate. (c) Plastic relief plate (fiberglass) cast from the copperplate. (d) A rough proof pulled from the relief plate. (e) A more careful proof, obtained by wiping excess ink from the plate before printing. (f) A still better proof, the result of wiping off excess ink as carefully as possible.

berg may have produced relief printing plates from copper engravings can be summed up as follows:

1. The relief plate is a remarkably faithful counterpart of the engraved copper plate. Even under the microscope, all of the engraved lines are present as corresponding ridges on the relief plate. In other words, no lines or dots were lost or appreciably blurred in the process.
2. In spite of the possible unevenness in the depth of the engraving on the copper plate and also in spite of the "low height" of the ridges on the relief plate, the impressions taken therefrom represent, as does the relief plate itself, a remarkably faithful rendering of the original design on the copper plate.
3. It is true that the printed lines from the relief plate have not the sharpness of the lines in the printed engraving. Also, they are obscured by the areas of excess ink deposits which can be reduced, but not wholly eliminated, by carefully controlled inking. To Gutenberg, however, if indeed he made the same experiment (using, of course, a soft metal instead of a plastic for the relief plate), the difficulty of inking would not have been a serious deterrent. He had no standards by which to judge the difficulty of a process; he was primarily concerned with whether or not it would be possible. The inking of a form for the 1457 Psalter has been proven by several experts to have been a highly complicated process (figure 31, a, b).⁸ The form was made up of several elements (from three to four; sometimes even more), which were separately inked in different colors, some of them actually after they had been removed from the bed of the press and then dropped back into the form for a single, simultaneous impression.
4. The fact that the image printed from a relief plate, which in its turn was the counterpart of an engraved plate, would not have been free from excess ink, need not have been a major stumbling block for Gutenberg. He was seeking not a clear, crisp line engraving to match the sharpness of his types but, in the early stages of his experiment, an image that could serve as a guide for the illuminator and which would be covered by pigments. Gutenberg, therefore, must have been concerned with eliminating excess ink not so much from the interior structure of the little figures as from their circumference. This was a problem relatively easy to solve.
5. In conclusion, the results of the experiment enhance rather than contradict the possibility that Gutenberg wanted to use engraved copper plates as matrices for relief plates. One can see from the impressions of the plastic plate that the thing was possible, even though rather difficult. This very difficulty may have been a contributing factor in preventing the successful completion of this part

8. See Heinrich Wallau, "Die zweifarbigen Initialen der Psalterdrucke von Johannes Fust und Peter Schöffer," in *Festschrift zum Fünfhundertjährigen Geburtstage von Johannes Gutenberg* (Mainz, 1900).

of Gutenberg's program. That he did not succeed does not argue against the possibility that he tried.⁹

In modern times the problem of producing relief from intaglio plates has been completely solved. Relief plates are made from engraved steel plates as a standard, everyday procedure at the Bureau of Engraving and Printing in Washington, D.C.; they form a vital step in the production of paper currency and postage stamps. The process is based on the invention of steel engraving by Jacob Perkins of Massachusetts (1766–1846). The following quotation will explain the process:

Current Practices
in Steel Engraving

The method of reproducing engraving devised by the inventive American Perkins, who also introduced the process into England and who may be considered the father of the present method of duplicating bank-note plates, has been greatly improved. The original engravings of the respective engravers, viz., portrait, script, square letter, ornamental, etc., each on a separate piece of steel, are hardened artificially by heating in sodium cyanide followed by a sudden chilling in brine. Each, after hardening, is placed on the bed of a press known as a transfer press, and a cylinder of steel made artificially soft is passed over it under great pressure, until all of the sunken lines of the engraving are reproduced in relief on the circumference of the roll. By the same process the rolls are made artificially hard and the engravings in relief on the rolls are transferred to a soft piece of flat steel, thus reproducing the original engraving. In assembling the work to make a plate for a new note, the rolls taken from the original engravings of the respective engravers are used to reproduce upon one piece of soft steel the original work of the several engravers and when that is completed, an actual reproduction of the design of the complete note is on this piece of metal, which is termed a die. This die, after all of its lines are joined and finally perfected by an engraver, is hardened and a roll is taken from it by the above described process, and upon this roll there is a reproduction of the entire note in relief. With this scroll, after hardening, the plates for printing are "laid down," as it is technically termed; that is, the entire note is reproduced by the transfer process in intaglio on a softened steel plate as many times as may be necessary. The printing plates are hardened before being used for printing.¹⁰

9. From my letter to Mr. Rosenwald, dated October 16, 1962, quoted here with some slight variations.

10. From an article entitled "Money Engraving in Colonies and United States Prior to 1861," in *Share Your Knowledge Review* (March 1934). See also Greville and Dorothy Bathe, *Jacob Perkins, His Invention, His Times, and His Contemporaries* (Philadelphia, 1943). I am indebted to Mr. Jacob Kainen, Curator, Division of Graphic Arts, The Smithsonian Institution, for having furnished me the information above, which he in turn had requested on my behalf from Mr. F. G. Uhler, Assistant Director, Bureau of Engraving and Printing, Washington, D.C.

Admittedly, this process depends on a knowledge of modern chemistry and metallurgy not likely to have been at Gutenberg's command in the fifteenth century. However, the alternating use of hard and soft metals, such as the tempering of a steel punch and its use in striking a matrix of soft metal, is an essential part of the traditional process of type production which is a basic element of Gutenberg's invention. The current use of relief cylinders made from plates engraved by hand in intaglio can therefore be considered at least as collateral evidence for the possibility that Gutenberg made similar experiments.

As a matter of fact there is irrefutable evidence for the existence of relief plates made from intaglio plates in Gutenberg's time, in addition to the "getté en molle" process already discussed.

Vasari relates that Maso di Finiguerra, for a long time considered the inventor of copper engraving, made sulfur casts from his niello plates and then made impressions on paper from these casts, by means of oil soot.¹¹ Vasari is not normally considered an absolutely reliable source, and his nomination of Finiguerra as the inventor of copper engraving has not been accepted. Twentieth-century research does show without question, however, that the process Vasari described does have some basis in fact. Moreover—and this is very important—sulfur casts and niello prints have survived to the present.

John Goldsmith Phillips has furnished some useful definitions:¹²

NIELLO refers to a silver plate upon which a design was engraved with a burin. The engraved lines that cut into the plate's surface were filled with a black enamel-like substance. . . .

SULPHUR CAST or "sulphur" is used to describe an impression in sulphur taken from a plaster cast of an engraved silver plate before the lines were filled with the niello substance. It presented the same engraved effect as the original.

[NIELLO PRINT] describes an impression on paper made by printing either from a niello plate before the black filling was added or from a sulphur cast of a niello plate. It is likely that both of these methods for making niello prints were used by early Florentine masters.

Phillips reproduces both sulfur casts of niello plates engraved by Maso di Finiguerra, which he dates about 1452–55, and niello prints from engravings by that artist, dating these about 1459–64.

Now, before attempting to evaluate this evidence in its bearing upon Gutenberg's experiments, it would be helpful to clarify some questions of tech-

11. Thieme-Becker, *Künstler-Lexikon*, IX, 584.

12. In his *Early Florentine Designers and Engravers* (Cambridge, Mass., 1955). See also Hind's *Catalogue of Early Italian Engravings . . . in the British Museum* (London, 1910), p. xiii, and his *Nielli, Chiefly Italian of the XV Century. Plates, Sulphur Casts and Prints Preserved in the British Museum* (London, 1936).

nique. The authorities quoted above furnish no very detailed information on the process of sulfur casting and niello printing, and there is little help in printed sources. Fortunately, Professor Cyril S. Smith of the Massachusetts Institute of Technology came to the rescue and furnished answers to some questions.

Sulfur is an easy material to cast: it melts easily (119°C) and for some time after it has cooled, it is in a moderately plastic state so that it can be stripped from the mold. Although it is mechanically not very strong, it is not much inferior to plaster, can be greatly strengthened by mixing with fine particles of some solid such as sand. Biringuccio (1540) refers to this. Sulfur is not chemically attacked by air or water at room temperature. . . . If the sulfur cast was to be an exact duplicate of the intaglio plate, then an intermediate mold in relief must have been made. A large variety of fusible materials or pastes could be used for this purpose. Plaster was so common that there is no reason to doubt any statement of its use, but a very fine-grained sandy clay would be equally satisfactory. A soft metal, usually lead, at a very high pressure was later used by printers for copying leaves and other objects, but it is unlikely that it would have been so used in the fifteenth century. . . .

In making a sulfur cast—I think, I’ve never done it—all that is necessary is to melt the sulfur, without heating it over about 140°C (overheating makes it increasingly viscous) and then to pour the thin liquid into the mold. A mere suspicion of oil or water on the mold surface would prevent sticking. The mixture of sulfur with sand as suggested by Biringuccio would supposedly be used at the same temperature, as a creamy liquid. Although sulfur in powdered form can be compressed when cold at a high pressure to a dense solid that will show every detail on the die surface, it is unlikely that this was used by the early nielloists, and . . . it couldn’t be pressed hard enough into a plaster mold without cracking it. Freshly cast sulfur is slightly plastic (it is very pliable if quenched from the viscous liquid state) but after lying around for several hours at room temperatures, it would be hard enough to make a print if the paper were merely rubbed on by hand, though it would not stand pressure or hold up for many prints.¹³

Our inquiry started with the question whether Gutenberg may not have used copper engravings as matrices from which to make relief plates for picture printing. The survival of sulfur casts made by the goldsmith Maso di Finiguerra is undeniable evidence that relief plates were cast in plaster or clay from intaglio plates in Florence around or shortly after the middle of the fifteenth century.

It is hardly necessary to underline the significance of this fact. But of equal, if not even greater importance is the almost certain knowledge that Gutenberg himself cast relief metal plates from engraved molds. This is a fairly recent

13. Quoted from Professor Smith’s letter of February 15, 1965, with some changes and additions subsequently supplied by Professor Smith.

discovery whose true value is only now being appreciated by the students of Gutenberg and the beginning of printing.

During his years in Strassburg (1434–44) Gutenberg not only experimented with printing; he also pursued other enterprises which were legitimate activities for a member of the goldsmith's guild. He taught a man called Andreas Dritzehn how to polish stones and formed a company with this man and two others (Andreas Heilmann and Hans Riffe von Lichtenare) to produce "mirrors" for the forthcoming great Aachen pilgrimage (Heiligtumsfahrt).¹⁴ The financial arrangements were concluded in March 1438, and the group began making mirrors for the pilgrimage.

Now what kind of mirrors did they make? One group of experts thought the word *mirror* was the abbreviated title of a book, such as the *Mirror of Human Salvation* (*Speculum humanae salvationis*). They interpreted the records, which stated emphatically that the method of production was a new and secret one, as indicating that Gutenberg and his associates were indeed engaged at that early date in some practically feasible form of mechanical book production. Other historians have maintained that actual mirrors were made. Largely through the efforts of Kurt Köster¹⁵ we know now not only that this was indeed the case, but also what they must have looked like.

The Aachen mirrors were small metal tablets (figure 33) measuring from 4¼ to 6¾ inches (105 to 170 mm.) high and from 2 to 3⅞ inches (50 to 87 mm.) wide. They had in the center a small circular space, surrounded by several prongs which could be bent over to hold a small convex mirror. There is reason to believe that great quantities of them, perhaps as many as 100,000, were made for one year's pilgrimage. The pilgrims bought these and held them up to reflect

14. Our knowledge of these facts derives from the records of a lawsuit of Gutenberg's partners against him. The original documents were destroyed in the Strassburg fire of 1870, but they had previously been transcribed and published verbatim and in facsimile. See Ruppel (n. 6 above), pp. 88–95. English translations and commentary are found in Douglas C. McMurtrie, *The Gutenberg Documents* (New York, 1941), chapter XI.

15. I am greatly indebted to Carl Wehmer, Director of the Heidelberg University Library, for having pointed out to me the work of Professor Köster, Director of the Deutsche Bibliothek in Frankfurt am Main. I am very grateful to the latter for having made available his article "Gutenbergs Aachener Heiltumsspiegel," in *Das Werk der Bücher, Festschrift für Horst Kliemann* (Freiburg, 1956), which has an excellent bibliography. See also his article "Meister Tilman von Hachenburg. Studien zum Werke eines mittelhessischen Glockengiessers des fünfzehnten Jahrhunderts," in *Jahrbuch der Hessischen kirchengeschichtlichen Vereinigung*, VIII (1957), 1–206, with 16 plates and an extensive bibliography, listing four other studies of Köster. His latest contribution is his lecture "Gutenbergs Aachener Heiltumsspiegel," delivered June 21, 1964, at the annual meeting of the Gutenberg Society in Mainz, which is scheduled for publication.

The most detailed technological and metallurgical discussion of Gutenberg's mirror production is found in Friedrich Adolf Schmidt-Künsemüller's *Die Erfindung des Buchdrucks als technisches Phänomen* (Mainz, 1951), pp. 57 ff.

The Aachen pilgrimage mirrors are also discussed, with valuable bibliographical and pictorial documentation by Heinrich Schwarz, in "The Mirror of the Artist and the Mirror of the Devout," in *Studies in the History of Art* (New York, 1959).

and catch both the physical image and the magical powers emanating from the sacred garments or other relics displayed in high ceremony to the pilgrims:¹⁶

During these *Heiltumweisungen*, that is to say, at the solemn exhibition of these church treasures—sometimes lasting a whole week—the pilgrimage reached its climax. . . .

Since the thirteenth century Aachen, the coronation seat of the German emperors, had been considered the most important holy shrine on German soil. The solemn display of its four most sacred relics, the Virgin's garment, the swaddling clothes of the Infant, the loincloth of Christ, and the kerchief of St. John the Baptist, attracted huge crowds of devout pilgrims and curious spectators who every seven years came from all corners of Europe to admire



Figure 33. Aachen pilgrimage mirror in a bell cast by Master Tilman von Hachenburg before 1450 for Rossbach (Westerwald). In the Nassauische Landesmuseum, Wiesbaden (original size).

piously these and many other relics displayed from the spire of Aachen's Liebfrauen Münster.¹⁷

The mirrors were often taken back home by the pilgrims and nailed onto house and stable doors and other places to ward off physical danger and evil spirits. Many of them were fixed into the molds from which church bells were

16. Figure 13 in Schwarz (op. cit.) is a very interesting woodcut from the Nuremberg *Heiltumbuch* (Peter Vischer, 1487). It actually shows pilgrims holding up their little mirrors as the reliquaries are displayed by members of the high clergy from a balcony above.

17. Schwarz, p. 101.

cast. The metal mirrors melted away in the process, but fairly accurate impressions (usually with some imperfections due to the casting) have survived to the present day in considerable quantities. The mirrors were cast in various metals such as tin, copper, and brass, from molds engraved in stone or metal. The mirrors themselves may have been made of glass or metal.

It is a point of distinct interest that antimony was often used at that time in the production of just the kind of mirrors made by Gutenberg.

Small convex mirrors were commonly made in Southern Germany before the beginning of the sixteenth century; and these continued to be in demand, under the name of bull's-eyes (Ochsenaugen), till comparatively modern times. They were made by blowing small globes of glass, into which, while they were still hot, was passed through the pipe a mixture of air, antimony, and resin or tar.¹⁸

Lead, tin, and antimony, it will be remembered, are the three basic ingredients of type metal.

The casting of relief images from molds was of course nothing new in the middle of the second quarter of the fifteenth century. But the language of the Strassburg documents insists on the secrecy surrounding Gutenberg's method. We have no way of telling just what this secret method was. The important point of all this is that Gutenberg did indeed produce relief plates from intaglio molds and that he apparently did it successfully and in considerable quantity. In the process, he undoubtedly gathered important, firsthand experience, possibly including copper as a working material. In other words, we know with reasonable certainty that he was well equipped and sufficiently experienced to experiment with the use of copper engravings as matrices for the production of relief plates. I cannot help but feel that Gutenberg's production of the Aachen mirrors lends considerable weight to the hypothesis proposed in this study.

More generally speaking, the picture of Gutenberg as a member of the goldsmith's guild in Strassburg, and engaged not only in his early typographic experiments but also in the polishing of stones and the casting of the Aachen mirrors, is decided evidence for the possibility that he experimented also with copper engraving.

18. *Encyclopaedia Britannica*, 11th ed., XVIII, p. 576. I am indebted to my friend Mr. Frederick G. Kilgour, Associate Librarian for Research and Development at Sterling Memorial Library of Yale University, for having pointed out to me the connection of antimony with early mirror making.

V

The Chronology of Early Copper Engraving

THERE IS an interesting question of chronology to be considered at this point. Maso di Finiguerra's Florentine niellos, sulfur casts, and niello prints date from 1459 and later. The earliest copper engraving with an unambiguous date on it is a Flagellation of Christ—one of seven engravings of the Passion of Christ in the Berlin Print Room—which bears the year 1446.¹ Gutenberg was engaged in typographic experiments as early as 1436.² Now, if we assume that Gutenberg did really try his hand at copper engraving, at what point in his career did he turn in that direction? Obviously, there is no possibility whatsoever of answering this question now. We do not know whether he tried to adapt the experiments of other members of the goldsmith's guild to his own specific purposes, or whether he was the one who took the first steps, either personally or as the mastermind directing a group of collaborators. If he did experiment with intaglio engraving of images, then it is also conceivable that he was the inventor not only of relief printing but also of copper engraving, that is, of the art of producing intaglio plates for the specific purpose of printing pictures in multiple identical copies. We cannot altogether close our eyes to this possibility.

It is not our purpose to proclaim Gutenberg as the inventor of intaglio printing but to offer a possible explanation for hitherto unrecognized chronological and geographical parallels between manuscript illuminations and the earliest surviving examples of copper engraving. The possibility of Gutenberg's priority in the evolution of that art is not a cardinal point of the argument, but it should at least be recognized.³

1. Max Lehrs, *Geschichte und kritischer Katalog* (Vienna, 1908), Textband, pp. 208–48, "Der Meister von 1446." Reproductions in volume I, plates 14–18.

2. The goldsmith Hans Dünne testified in Strassburg in 1439, "that about three years ago he earned from Gutenberg approximately (one) hundred gulden, solely (for) what pertained to printing" (McMurtrie's trans. in op. cit., p. 117). See the reproduction of the document and its German transcript in Ruppel, op. cit., p. 93.

3. A complete and detailed examination of the origins of intaglio printing in the fifteenth century is not the central objective of this study. However, I would like to point out one historical fact of a technical nature which seems to have been overlooked by all students of early engraving. In order to obtain a good, clean impression from an intaglio plate after it has been inked, it is necessary to wipe off the ink from the surface of the plate, so that the pigment remains only in the grooves. This is exactly the technique employed in the preparation of books written on palm leaves in Indian, Burmese, Sinhalese, and other languages. David Diringer, in his *The Hand-Produced Book* (New York, 1953), describes the process as follows (p. 42):

The scribes, employing an iron stylus (a sharp-pointed implement) to scratch the letters, were compelled to avoid long straight lines, because the scratch along the longitudinal fibre, which runs from the stalk to the point, would split the palm leaf, which is extremely fragile. . . . In order to make the signs plainer, ink—prepared from oil and charcoal—or

Two further factors bear on the central problem of our study. Both hinge on the position of Gutenberg as the mastermind managing a sort of laboratory engaged in a variety of experiments and enterprises, employing groups of both skilled and unskilled assistants and associates, and supported in his activities by considerable capital resources.

Concerning the men he worked with, it is not very daring to suggest that Gutenberg assigned specific tasks to specially organized teams or individual artisans. For instance, the Strassburg lawsuit documents discussed above show him collaborating with a team in the production of the Aachen mirrors. Moreover, it is almost certain that he employed Peter Schöffer, the manuscript scribe trained in calligraphy who returned from Paris to Mainz some time after 1449, in the capacity of what we would today call a type designer.⁴ In the fifteenth century and in Schöffer's case this would actually have meant that he cut the punches and quite likely also struck the matrices, and so forth.

We are now assuming that Gutenberg may also have employed a certain superb artist and craftsman whom we do not know by name but whom we call the Master of the Playing Cards. One argument in favor of this assumption is an interesting parallelism in the habitats of these two men. Gutenberg's biography is supported by documentary evidence, that of the Master of the Playing Cards only by indirect stylistic and iconographic observations. Nevertheless, there is sufficient similarity to warrant our attention.

Gutenberg was born in Mainz some time between 1394 and 1399. He left his native city in September 1428.⁵ He was certainly in Strassburg between 1434 and the spring of 1444. Then came a period of about three and a half years in which his whereabouts are unknown; he may have been in Basel.⁶ By October 19, 1448, he was back again in Mainz.

The Master of the Playing Cards was assigned to the region of the Middle Rhine by Ludwig Kämmerer,⁷ and Max Lehrs originally placed him in the same

other pigment was rubbed over the surface of the leaf, and filled up the finely incised lines to make them visible, and so permanent that they cannot be effaced.

Diringer does not specifically refer to the wiping off of the ink, but anyone who has ever seen an original palm leaf manuscript can tell that the ink is present only in the previously incised lines.

In other words, one important technical factor essential to successful intaglio printing was developed centuries ago in Asia, just as paper, the all-important printing material, and such significant elements of relief printing as the cutting of wooden blocks and the production of single, movable types in a variety of materials, were developed and practiced in Asia long before Gutenberg's early experiments.

4. See my *Peter Schöffer of Gernsheim and Mainz* (Rochester, 1950), Chap. II.

5. See Aloys Ruppel, *Druckte Gutenberg vor seiner 42-zeiligen Bibel ein grösseres Werk?* (Mainz, 1955), p. 9.

6. Ruppel, *ibid.*, p. 14. See also his article "Druckte man in Basel früher als in Mainz?" in *Stultifera Navis* 6, no. 1/2 (Basel, 1949), 4.

7. In his "Der Kupferstecher E. S. und die Heimat seiner Kunst," in *Preussisches Jahrbuch XVII* (1896), p. 146.

region and more particularly in the Mainz area, but later agreed with other earlier authorities who had identified him with Cologne. In his *Geschichte und kritischer Katalog*, however, he favored the upper Rhine valley, particularly Basel. The new evidence presented here strongly points to the presence of the master in Mainz around or after 1450.

A cautious reading of these data certainly does not contradict, but rather favors, the possibility that the two men not only knew each other, but may have been associated in a common enterprise over a number of years and in more than one place.

In regard to the financial aspects of Gutenberg's possible connection with the art of copper engraving in early stages of its development, there is the significant fact that Gutenberg invested large sums of money in his various enterprises. Nothing can better demonstrate to the modern reader the magnitude of the capital resources used by Gutenberg than the following comparisons.

A Bible written on parchment in 1450 could be purchased for fifty gulden. The scribe who wrote a Bible of large format preserved in Giessen received in 1454 a compensation of only twelve gulden and sixteen shillings.⁸ But Gutenberg asked no less than 160 gulden as a fee from two of the men he took into the Strassburg partnership which he formed for the production of the Aachen mirrors. "What sums were put into this business by Gutenberg and his three partners at the start and subsequently as running capital is not known."⁹

Again, Curt F. Bühler has this to say about the kind of money invested in Gutenberg's enterprises:

Gutenberg's
Capital Resources

Whatever it may have been that persuaded a worthy citizen to seek his fortune with the press and whatever the opinions may have been as to the results of his endeavors, one thing is certain: the venture required a whole lot of capital. You will recall that it was John Fust's claim that he had put over 2,000 gulden into Gutenberg's printing business—and even if only the 1,600 be admitted which Gutenberg did not contest—this was indeed a very large sum of money for those days. The annual salary of the Stadtkanzler of Mainz, Dr. Konrad Humery, amounted to only 130 gulden in 1444, rising to 208 some years later; we have evidence to show that this latter figure permitted him to live very handsomely. The sum which Fust had been willing to risk in this business amounted, therefore, to at least the equivalent of ten years' wages for a high-living city politician. In the imperial city of Augsburg, in 1467, there were only sixty-three individuals with a taxable capital of 2,400 gulden among the 4,510 citizens who were then on the tax rolls.¹⁰

8. Ruppel, *Johannes Gutenberg*, p. 146.
9. Ibid., p. 89.
10. Quoted from *The Fifteenth Century Book* (Philadelphia, 1960), pp. 51, 52 (references omitted here).

There has been a great deal of speculation about the projects for which Gutenberg required such major capital investment. To mention only one aspect of the puzzle, it is not clear whether Fust financed only the printing of the 42-line Bible or whether he also underwrote the production of the printing plates for the polychrome initial letters and the calligraphic scrolls for the 1457 Psalter and later books from the same press.

We have no way of answering these questions with any degree of certainty. What matters is that Gutenberg certainly worked with groups of unskilled as well as highly qualified associates and that he handled major capital resources in his various enterprises. Both these points are favorable evidence for Gutenberg's involvement with copper engraving.¹¹

11. One further set of circumstances pointing indirectly to Gutenberg's connection with the beginnings of copper engraving deserves to be mentioned briefly. In Joannes Andrea's foreword to the *Letters of St. Jerome*, published by Sweynheym and Pannartz, the first printers in Italy, in 1468 (Census H-161) we find the statement that Cardinal Nicolaus of Cusa had wished above all that the holy art of printing, which had come to life in Germany, be introduced in Rome.

Cardinal Cusanus (1401-64), a great churchman, philosopher, and scientist, was in Mainz in 1444, 1445, 1446, and 1451. He also visited Basel and other places in the Rhine valley. It is hard to believe that he did not meet Gutenberg and gain from him firsthand information about the invention of printing. But Cusanus was also deeply interested in copper engraving. He was the author of a large map of Germany which he ordered to be engraved on a copper plate when he moved to Rome, where he lived with some interruptions from 1458. This map of Germany is considered the earliest map ever to have been engraved on a copper plate (for details see *The Cradle of Printing*, H. P. Kraus Catalogue 69, New York, n.d., no. 37).

Obviously, Cardinal Cusanus' double interest in early printing and early engraving cannot be considered proof of the common origin of the two crafts. However, it should be kept in mind in future considerations of the questions with which this book is concerned.

VI

LET US assume, in the light of the evidence considered so far, that, as a first step in producing relief plates for the multiplication of miniatures, Gutenberg engraved (or had engraved for him) a number of small copper plates. According to his practice these plates were to have been locked up in the same form with types, initial letters, and calligraphic ornaments, and printed simultaneously. As we have shown above, Gutenberg did not employ the principle of multiple, superimposed impressions for polychrome printing, except on some pages of the 42-line Bible. He preferred to ink each form with as many colors as necessary and to pull a single impression.

Technical
Difficulties in
Typographic
Production of
Miniatures

At this point, other seemingly grave objections arise. One may still ask what might be the connection between an illuminated figure, painted with a fine brush and modeled in a rich scale of colors, and the kind of monochrome line drawing that might have been reproduced by a relief metal plate from which figures could be printed in the margins. To be sure, the figures of the Playing Cards Master show a highly successful translation of painted surfaces into delicate graphic line systems. But how much of this would have come through in the embossing or casting process?

This objection, too, can be eliminated. We must consider again the nature of Gutenberg's technical approach, his step-by-step replacement of individual manual activities by corresponding typographic processes. At this point the special problem of reproducing miniatures and scrolls by relief printing would have had to be divided by him again into a series of separate steps.

And what was the first step? Here, once again, the Giant Bible in Washington becomes an important piece of evidence. It offers an amazingly simple and convincing answer. On the incompletely illuminated pages we find, for example, in the second volume on f.204v (figure 34), a border drawn merely in outline, with three flowers also in outline, of which two, the columbine (= G.59) and the little rose (= G.34) are similar to flowers on the engraved playing cards (figure 35). It is a fortunate circumstance that a little rose in its fully illuminated stage and corresponding in all details to its engraved counterpart can be seen in the Giant Bible in Würzburg (f.452v, figure 36).

The Importance
of the Outline
Drawing

In the Göttingen model book, too, the first step shown is an outline drawing. (See above, p. 21, and figure 15.)

An outline drawing of the miniatures, then, must have been the first production phase which Gutenberg would have had to reproduce in print. There is nothing very surprising about this; it is an established procedure. Moreover,

Inapit epla secunda bñ Petri apostoli.

Capitulu primum.

Symon petrus seruus
et apostolus ihesu xpi.
hys qui coequalē no-
bilium sortiti sunt fidē
in iusticiam dñi nři et
saluatoris ihesu xpi.
gracia uobis et pax
ad impleatur in cog-
nitione dñi nři ihesu
xpi quoniā omnia no-

bis diuine virtutis sue que ad uitā et pietatē
donata est. per cognitionem eius qui uocauit
uos propria gloria et uirtute. per quē maxi-
ma et preciosa uobis promissa donauit; ut p-
her efficiamini diuine consortis nature. fugi-
entes eius que in mundo est concupiscencie cor-
ruptionem. ¶ Vos autem curam omnem
subinferentes. ministrare in fide uā uirtutē.
in uirtute autem scienciam. in sciencia autem
abstinentiam. in abstinentia autem pacienciam.
in paciencia autē pietatem; in pietate autem
amorem fraternitatis. in amore fraternitatis
caritatem. Hec enim omnia si uobiscū allint
et superent. non uacuos nec sine fructu uos
constituent in dñi nři ihesu xpi cognitione.
Cui enim non presto sunt her ceus est et ma-
ni temptans; obliuionem accipiens purga-
tionis ueterū suorum delictorum. ¶ Et na-
ppter fratres magis satagite. ut per bona op-
ra certam uiam uocationē et electionē faciatis.
Sic enim habundanter ministrabitur uobis
introitus in eternū regnū dñi nři et saluatoris
ihesu xpi. ¶ Propter quod incipiam uos
semper commouere de hys; et quidem sciētes
et confirmatos uos uolo in p̄senti ueritate.
Iustum autem arbitror quamdiu sum in hoc
tabernaculo suscitare uos in communiōne;
certus qđ uelox est depulsio tabernaculi mei.
scdm quod et dñs nři ihesus xp̄s significa-
uit michi et reuelacione. Dabo autē op̄am
et frequenter habere uos p̄st obitū meum;
ut horū memoriā faciatis. ¶ Non eī in dōdas
fabulas secuti notam facimus uobis dñi nři
ihesu xpi uirtutem et p̄senciam: sed sp̄cula-
tores facti illius magnitudinis. Accipiens enī
a deo patre honorem et gloriam uoce delapsa
ad eum huiusmodi a magnifica gloria hic
et tunc et delectus. in qua michi cōplacui

Figure 34. Portion of one of the incomplete pages in volume II of the Giant Bible of Mainz, Washington, D.C. (f.204v, reduced).



Figure 35. The same flower as one in figure 34, in the engraved playing cards (G.34, original size). Figure 36. From the Giant Bible, Würzburg, f.452v (original size).

the transfer of a drawing from the model book (or sheet) onto the actual page of the manuscript was often achieved by some mechanical means long before Gutenberg.

First there is the transfer by tracing. The collector Mark Lansburgh (himself a competent graphic artist) has discussed this process. He noticed that the miniature of the deer on one of his fragments (see p. 25 above) was just about the same size as the engraved deer:

Tracing

but a scribe line (quill-line, pencil-line!) wider. It is my opinion that the artist traced the deer first onto a transfer-sheet, as it would be nearly impossible to trace through vellum of this thickness and density. Then he rubbed or transferred the drawing onto the vellum by using graphite on the reverse side of the drawing (from the copy-book). After the graphite (or whatever) is transferred, the artist then inks in the form and naturally makes slight changes. I feel very confident about all this as I do it myself when copying art and reusing an original onto something else.¹

The fact that a given miniature has been painted on top of a drawing which in turn was traced from a model is usually difficult to prove in medieval illumination. A certain stiffness, a certain mechanical quality of style, is often the only criterion which leads the observer to suspect tracing.²

One of the oldest transfer methods is the simple but ingenious device known as "pouncing." The outlines of the picture to be transferred are first perforated

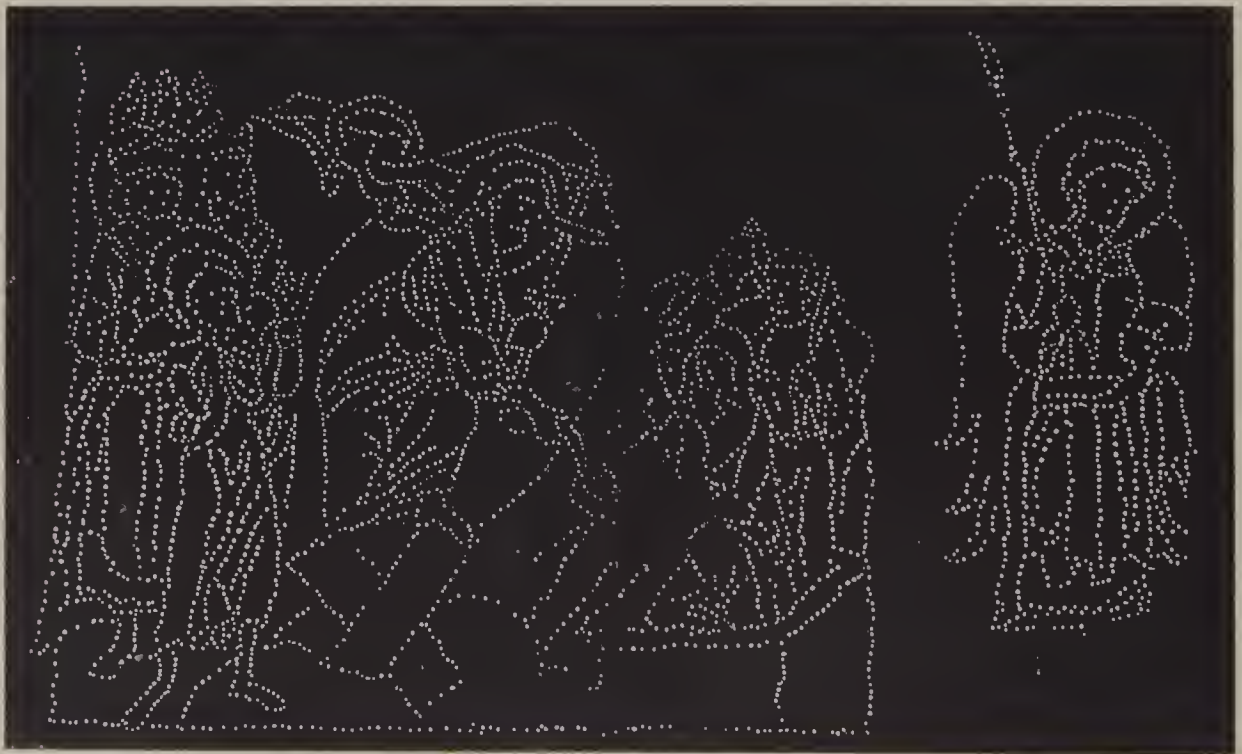
Pouncing

1. Letter to the author of August 12, 1964.

2. In the nineteenth century, from which many original artists' drawings for printed book illustration have survived, there is ample proof of tracing. The drawings often show "blind" indentations of the outlines, left by the tracing tool. See my article, "English Illustrators in the Collection of George Arents," in *The Colophon, New Graphic Series* (January 1940). Incidentally, such outlines are known to have been traced into faked drawings to lend added authenticity.



a



b

Figure 37. Examples of pouncing in (a and b) a *Menologion Icon* produced in Egypt (?) between the thirteenth and fifteenth centuries A.D., (c) a twelfth-century (probably Italian) manuscript of St. Augustine in the Yale University Library, (d and e) a thirteenth-century English *Bestiary*.



with a series of closely spaced pin-pricks. Powdered charcoal is then poured into a soft linen or muslin bag, and the bag rubbed over the pin-pricked figures, leaving on the surface of the vellum or paper underneath a clearly visible outline in the form of dots which then can easily be connected into a continuous line.³ None of the pin-pricked miniatures or drawings that I have examined shows any traces of the charcoal powder or the flaking off of pigment which one would expect from their use as models. This is easily explained by the fact that the copyist did not use the miniature itself as a "stencil," but applied the pin-pricks to a loose sheet laid under the page, which he in turn used as his pounce.

What appears to be the earliest Western manuscript with evidence of pouncing is a twelfth-century manuscript, probably Italian, of St. Augustine's *Confessions* in the Yale University library (Marston MS 130). On page 10 (lines 20–26) is a large initial letter "P" at the foot of which sits a grotesque little figure. The outlines of this figure were carefully pin-pricked all around at some unknown time by someone who wanted to make a copy of it (figure 37c).

An English thirteenth-century bestiary on vellum in the possession of Philip Hofer at Harvard is an excellent example of a complete model book, containing both text and illuminations, with the outlines of all the miniatures carefully pin-pricked (figures 37d and e).⁴

Another English example of pouncing is a fifteenth-century codex on vellum in the Pierpont Morgan Library,⁵ containing John Lydgate's *Siege and Destruction of Troy*, followed by the anonymous romance of Sir Generides. The tall vellum folio contains illuminations in all stages of production, from the untouched blank spaces left open by the scribe to scenes drawn quite mechanically in outline; others are partially or completely colored. On f. 133 one of the figures, a bishop, is outlined all around by pin-pricks, sign of an attempt at pouncing.

It is also possible to connect the Master of the Cleves Hours with pouncing. In the Hague there is a prayer book with twelve miniatures which have generally been accepted as the work of the Cleves master, although it seems more likely that they were the products of his workshop.⁶ The use of pouncing can be seen most clearly in the miniature of the Last Judgment (f. 13v), but it seems also to have been employed in most, if not all, of the other miniatures. We recognize,

3. See the description of a *Menologion Icon*, produced possibly in Egypt between the thirteenth and the fifteenth centuries, in *A Collection of Papyri*, H. P. Kraus Catalogue 105 (New York, n.d.), no. 140 (reproduced here as figures 37a and b), now the property of the Beinecke Rare Book and Manuscript Library at Yale University.

4. See S. A. Ives and H. Lehmann-Haupt, *An English 13th Century Bestiary* (New York, 1942); also, R. W. Scheller, *A Survey of Medieval Model Books* (Harlem, 1963), no. 13, p. 101, figures 53, 54.

5. The pouncing in this codex (M.876) was brought to my attention by Mr. John H. Plummer of the Library.

6. The Hague, Meermanno-Westreenianum Museum MS 10, E.1. See Plummer, *The Book of Hours of Catherine of Cleves* (New York, 1964), p. 22. See also Byvanck, *La Miniature dans les Pays-Bas Septentrionaux* (Paris, 1937), plate XLIX.

then, that the atelier of the master who may have been one of the important sources for the hypothetical Mainz model book was familiar with and practiced a mechanical labor-saving device for the transfer of drawings from models to the pages of the manuscript.

Pouncing also occurs in the beautiful Bergamo Alphabet—best known of all model books because of its quality and probable influence on Lombard works of art about 1400—and in an early fifteenth-century Icelandic model book.⁷

We are assuming, to return once more to our main argument, that Gutenberg tried to multiply outline drawings of miniatures by typographic means. If our assumption is correct, we can now point out that in so doing he was not applying a mechanical process to a procedure that had previously been practiced only by individual, free-hand drawing. Rather, he was trying to replace semi-mechanical procedures by a fully mechanical technique which he could integrate with the rest of his typographic system.

It becomes clear so far, then, that Gutenberg would have tackled the printing of the scrolls on the one hand, and of the figures and flowers on the other, as separate problems. Also, the mechanical transfer of an outline drawing would have been sufficient for his purposes, at least in the early stages of his experiment.

If the relief plate made from the copper plate did not reproduce all details exactly, it would not have mattered very much. Obviously, the painting-in of the details would still remain the task of the miniaturist. Nor would Gutenberg have hesitated to use some of the printing plates repeatedly, since variations of the details could easily have been accomplished in the painting-in process. The procedure of adding hand rubrication and illumination to the pages of early printed books is a well-established fact. Not only Gutenberg's own products, but also a large number of incunabula well into the second half of the fifteenth century clearly show in their manner of production that they were intended to be passed on from the press room to the desk of the rubricator for the addition of red writing and to the illuminator for the painting-in of miniatures, initials, and border decorations. The entire development of woodcut illustration from Pfister to Dürer proceeded unequivocally from an outline drawing that was to be painted-in toward an independent, monochrome graphic statement. That Gutenberg did not use the woodcut in the 1450s is explained first by his basic character as goldsmith and metal technician, and second from the specific fact that the lines of the woodcut would have been much too coarse for his purpose.

Many animals of the playing cards were engraved on separate plates, which were later mounted in many different combinations on larger plates used for printing of the cards. Even in some of the reproductions of the engravings one can see the outlines of certain of the smaller plates quite clearly. The irregular shapes of the plates resulted from the fact that they were cut as closely as possible to the outlines of the figures. In some instances even the nails used in

Hand Coloring

7. Scheller, *op. cit.*, nos. 21 and 19, respectively.

The Adaptation
of the Copper
Engravings as
Playing Cards

mounting have left their marks on the playing cards. This method of mounting plates in different combinations reminds us of the composition of words from individual types and of sentences from words. The Playing Card Master covered certain areas of his plates with little strips of paper to prevent their taking ink while printing; this procedure is reminiscent of early experiments with the printing of red as a second color in some of the earliest books printed from type.

Let me repeat the assumption that Gutenberg, at an unknown moment in his career, began to have small single plates engraved in copper. Later, at an equally unknown moment, he must have realized that he could not pursue these experiments further. *Nolens volens* he released the plates. His copper engraver—in other words, the Master of the Playing Cards—looked for an opportunity to employ his printing material in an economically productive way. He decided to utilize the already existing intaglio plates to print a set of playing cards; he supplemented his material by adding cards which required large figures, and other cards which were to be printed not from the composite plates with individually mounted little figures but from newly engraved whole plates.

There is irony in the fact that apparently the little copper plates, intended for the marginal embellishment of a Bible or some great liturgical work, became the leaves of a “devil’s prayerbook”; some consolation can be found, however, in the observation that their original purpose was fulfilled when the playing cards, originally derived from a model book, served in turn as a kind of model book, from which some of the figures were copied into ecclesiastical volumes in the later course of the fifteenth century.

The Problem of
the Playing Cards
Solved

The proof of the assumption that the engravings were not originally made for playing cards hinges on the crucial question of whether the set of cards followed an already established iconographic pattern or whether it represents a new, unprecedented venture. This question has been answered with gratifying certainty by Professor Hellmut Rosenfeld of Munich, one of Germany’s outstanding experts in the early history of playing cards. He says it was the custom of early fifteenth-century sovereigns or gentlemen of high rank to have playing cards made to order:

not only from their personal enthusiasm for card-playing, but to indulge in conspicuous consumption. . . . There are the Stuttgart Cards,⁸ which can be dated 1437 on the basis of the paper on which they are painted; and some ten years later, the Ambras Royal Hunting Cards. . . .

Whereas these cards were painted in a courtly manner for an aristocratic employer and designed to reflect his world, the “Master of the Playing Cards” worked in a confused manner. He used for his suits animals of prey, deer, birds, flowers, and wildmen. The beasts of prey, birds, and flowers of the most varied kinds are placed together in one suit, but the position

8. Max Geissberg, ed., *Das Kartenspiel der Staats- und Altertümersammlung in Stuttgart* (Stuttgart, 1910).

and posture of the little engravings used in his deck of cards are so heterogeneous that the individual cards, however much one may admire their artistic vitality, are highly confusing and virtually useless for practical playing purposes. While the "Master of the Playing Cards" engaged in this really fantastic arrangement of his cards, it is impossible to understand why he had not learned anything at all about the obvious technique of production of the popular playing cards. The manufacturers of popular playing cards cut from eight to forty-eight different cards (depending on the desired size) on a single wood block. They printed, colored, and glued them on pasteboard, and then cut the sheet apart. But the Master of the Playing Cards not only produced a single copper plate for each playing card, but also made up most of his plates from the most varied individual little plates. In other words, he engraved all the lions, bears, single flowers, birds, and wild-men on tiny single copper plates and then underwent the tedious task of placing these together, according to what was needed. For example, the stag nine required nine individual copper plates combined into a single plate for the printing of the desired stag nine. This procedure was most time-consuming and impractical, the very antithesis of good business practice, which up to now has remained completely mysterious and without parallel in the entire production of playing cards, including the Master's imitators.

Lehmann-Haupt has now solved the riddle of this procedure. . . . [The Master of the Playing Cards] is no longer to be considered an ingenious inventor, but a skilful copper engraver following available models. His playing cards, to be sure, have been imitated by other artists, since the patrons of the fine arts enjoyed these bizarre, but impractical cards and saved them from oblivion by pasting them into books and manuscripts. For the history of playing cards, these particular cards have become, unfortunately, a blind alley. In the sixteenth century, these kinds of playing cards were "gone with the wind," since they represented merely a passing fad.⁹

Professor Rosenfeld has further endorsed the ideas proposed in this book. Among other points, he emphasizes that copper engraving must have started in the upper Rhine valley before 1446, the date on the flagellation scene of the "Master of 1446," at the same time when Gutenberg was in Strassburg. Like the earliest copper engravers he too was a goldsmith

and even then he must have taken notice of a technique for the multiplication of patterns and pictures, which came from within his own craft,

9. In his review of my article, "Gutenberg und der Meister der Spielkarten," in *Papers of the Bibliographical Society of America*, Vol. 58 (first quarter 1964), pp. 53-59 (translated by Billie Dickenson Harber).

particularly in regard to the inking medium. For in developing a printing ink suitable for metal types he could of course not start with the pigments used for woodcuts; it was much more likely that he chose the inks tried out in copper engraving as the basis for further experiments and developments.¹⁰

An Unanswered Question

The observations in the first part of this book have raised a great number of questions. A certain number of them could be answered—some definitely, others only tentatively. Among those that must remain unanswered is one that is closely related to the main hypothesis proposed, and I should like to raise it again. Is there a causal connection between the publication of a set of playing cards printed from copper plates which presumably were prepared as a step in the development of the printed book illustration, and the separation of Johannes Gutenberg from the printing establishment at Mainz? And are these events related to the sudden interruption of the illumination of both the Giant Bible of Mainz and the Scheide Bible?

We have submitted evidence (pp. 11, 42) in support of the publication date 1453–54 for the engraved playing cards. By November 6, 1455, Gutenberg had lost control of his printing plant.¹¹ Some time before that event the 42-line Bible, including the copy in the Scheide collection, must have left the press. The miniaturist of that copy interrupted his work somewhere in the middle of the first volume. The writing of the Giant Bible of Mainz in the Library of Congress was completed on July 9, 1453. The main master of the miniatures stopped his work at the end of f.31 of the first volume. If there was indeed a connection between these events, was it of an external nature? In other words, was it caused by a general political, social, or economic upheaval? No such condition existed in Mainz until the bloody catastrophe of 1462—obviously too late to be seriously considered in this context. It is therefore conceivable that the growing alienation of Gutenberg from his financier Fust, which culminated in the 1455 lawsuit and in Gutenberg's loss of his printing equipment, was the common cause. This could mean, among other things, that Gutenberg, the inventor of printing with movable metal type on a press, had a far greater connection with and influence on the traditional craft of manuscript production and illumination in Mainz than we have hitherto dared to think.

10. Translated from Hellmut Rosenfeld, "Der Meister der Spielkarten und die Spielkartentradition und Gutenbergs typographische Pläne im Rahmen der Entwicklung der graphischen Künste," in *Börsenblatt für den deutschen Buchhandel* (Frankfurt, July 31, 1964), no. 61. This is a considerably expanded version of the review cited above (n. 7).

11. Aloys Ruppel, *Johannes Gutenberg* (Berlin, 1947), pp. 19 and 137.

Conclusion

WE HAVE reached the end of our search into the remarkably complex pattern of influences, relationships, interlocking practices, and changing procedures that spell out what we may now recognize as the first sustained effort to replace the drawn or painted image with the printed picture. We are beginning to see that this attempt was a vital element of primary experimentation in the historic transition from the medieval manuscript to the printed book of the modern world.

It does not take an exceptional amount of curiosity to wonder why printed book illustration started so humbly. Albrecht Pfister's *Ackermann von Böhmen* is usually considered¹ the earliest illustrated book printed in the western world from movable type. It was set in a font that was abandoned by Johannes Gutenberg in Mainz at some stage in his career, and locked up on the bed of one of the presses in Bamberg, up the river Main, with some rather crude full-page woodcuts.

In the course of the fifteenth century, the art of cutting wood-blocks and fitting them agreeably into the printed page was practiced with increasing taste and skill. Yet book illustrations still followed closely the popular pen-and-ink and water-color techniques that had been used in mass-produced paper manuscripts written in the vernacular languages² instead of the sophisticated, ecclesiastical illumination in fine brushwork on the choice vellum leaves of theological and classical works in Latin. Eventually, some printers here and there in Europe employed especially gifted craftsmen whose woodcuts approximated some of the elegance of late medieval illumination, especially in initial letters and borders,³ but they were the exception. Generally speaking, primitive, popular illustrations were the rule until the sixteenth century, when copper engraving slowly and gradually replaced the woodcut. There is a curious social logic in this development. Printing, after all, is the earliest and the most important of all existing media of mass communication. So it seems quite understandable that

1. See Albert Schramm, *Der Bilderschmuck der Frühdrucke* (Leipzig, 1922), Vol. I, p. 1; Arthur M. Hind, *History of Woodcut*, II (London, 1935), p. 276.

2. See Rudolf Kautzsch, *Einleitende Erörterungen . . .* (Strassburg, 1894); Hellmut Lehmann-Haupt, *Schwäbische Federzeichnungen* (Berlin, 1929); Hans Wegener, *Beschreibende Verzeichnisse der Miniaturen-Handschriften der Preuss. Staatsbibliothek zu Berlin* (Leipzig, 1929), I; L. M. G. Delaissé, "L'Atelier du Maître de Wavrin et l'Office de Jean Miélot à Lille," in *La Miniature flamande* (Brussels, 1959); *Thirty-Five Manuscripts*, H. P. Kraus Catalogue 100 (New York, n.d.), pp. 74-76.

3. My friend Thomas Marston at the Beinecke Library of Yale University pointed this out to me, particularly in regard to certain North German printers.

printing, and especially picture printing in books, should have become associated with popular and democratic rather than aristocratic levels of cultural expression.

The writing of books in German, Dutch, French, and Italian rather than in the universally current Latin, the illustration of these books with colored line drawings on paper in a popular idiom for the rising middle classes rather than with illuminations delicately painted on vellum—all this was quite new in the fifteenth century. The secular workshops, run often in small provincial communities by schoolmasters and scribes, took their humble place alongside metropolitan ateliers in which professional calligraphers and painters sometimes of the highest caliber catered to the bibliophilic appetites of the great, the powerful, and the wealthy.

Why then this overwhelming trend toward the popular in nearly all the early printed book illustrations? From the observations contained in this book it seems clear to me that the very earliest experiments in printed book illustration were based on, and attempted to reproduce, the fine art of book illumination and decoration. This is the real meaning of Gutenberg's creative dream. He started at the top. That he did not succeed, for both technical and economic reasons, does not alter the nature of his basic plan—his concept of what he wanted printing to be. If he had had his way, book printing and book illustration would have developed along lines altogether different from their recognizable historical course. There is probably no particular reason to regret the turn of events and the assertion of history's own social and economic logic. But it is the privilege as well as the duty of the historian to recognize what might have come to pass. Here indeed a stone placed at its source altered a whole river's course.

The tragic element in Gutenberg's life, recognized by all who have contemplated it, is deepened by the new insight into the magnitude and generosity of his concepts and intentions.

Actually, what he tried to achieve—the production of book illustration in color on a press, was not fully realized until about two hundred years later:⁴ we can consider James Christopher Le Blon's development of the three-color process early in the eighteenth century the true beginning of color illustration in the modern sense.⁵ Gutenberg's invention did away with the publication of books in the form of multiple handwritten copies. A small trickle of precious calligraphic book production survived through the Renaissance and Baroque periods into the eighteenth century. With it a very limited, highly specialized tradition of miniature painting and illuminated decoration survived in the handwritten books. But the advent of color printing in book illustration did away

4. See R. M. Burch, *Colour Printing and Colour Printers* (New York, 1910), Chap. 1 and 2, for the experimental beginnings of color printing, such as the *Book of St. Albans* (St. Albans, 1486), or Jean Dupré's remarkable *Book of Hours* (Paris, 1490), and the early steps in the sixteenth and seventeenth centuries.

5. Burch, *ibid.*, pp. 50–59.

with these last remnants of the noble art of illumination and completed the process of transition from the medieval manuscript to the modern printed book. The revival of calligraphy and miniature painting in the late nineteenth and the twentieth century marks the beginning of the revolt against the supremacy of the machine. That, however, is another story.

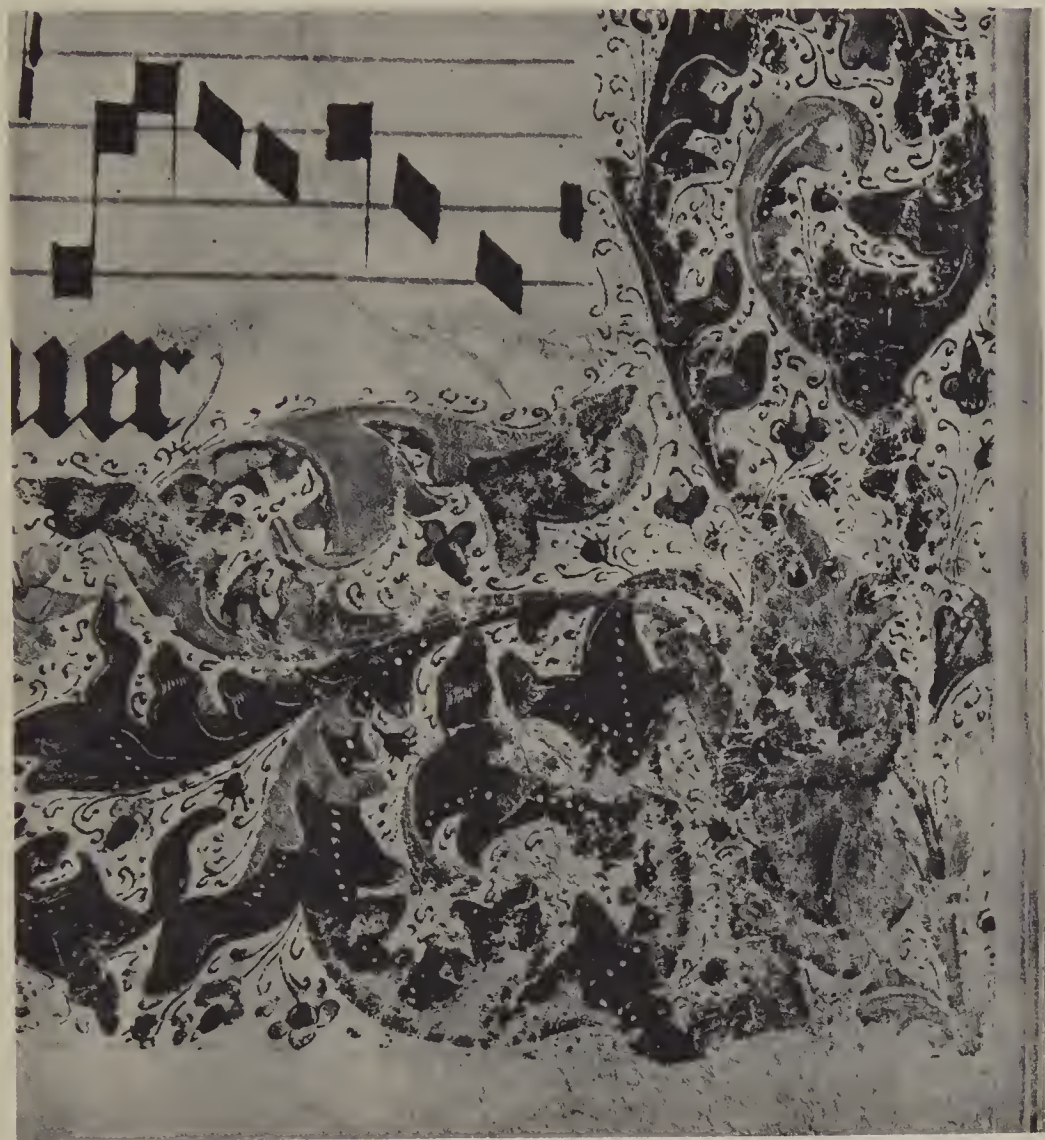


Figure 38. The climbing bear on f.4r of a North-Netherlandish *Antiphonal*. (See figures 3 and 4.)

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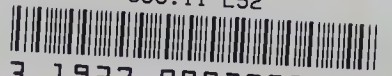
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